COMPARATIVE ANALYSIS OF PHONOLOGICAL PROCESSES BETWEEN TAMIL AND HINDI LOANWORDS INTO INDONESIAN LANGUAGE (A STUDY OF TRANSFORMATIONAL GENERATIVE PHONOLOGY)

A THESIS

In Partial Fulfillment of the Requirements

for Master Degree in Linguistics

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CERTITICATION OF ORIGINALITY

I hereby declare that this study is my own and that, to the best of my knowledge and belief, this study contains no material previously published or written by another or material which to a substantial extent has been accepted for the award of any other degree or diploma of any university or other institutes of higher learning, except where due acknowledgement is made in the text of the thesis.

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MOTTO

Better to feel how hard education is at this time rather than feel bitterness of stupidity, later. There is no limit of struggling. Do the best and pray. God will take care of the rest.

DEDICATION

This thesis is dedicated to my parents, my family, my friends, and to all those who helped made it possible.

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All praise to Allah SWT for His blessing that has been given to me, so I can complete this thesis entitled “Comparative Analysis of Phonological Processes between Tamil and Hindi Loanwords into Indonesian Language (a Study of Transformational Generative Phonology)”. This thesis is arranged to fulfill the requirements for the degree of Master of Linguistics from Faculty of Humanities Diponegoro University.

In this occasion, I would like to thank you to all of those who have given me help and guidance so that this final project can be finished. Completion of writing of this final project the author would like to thank to:

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Finally, the writerrealize that this thesis still contains weakness.Constructive critics and suggestion given for the improvement of this final project are expected for the further study. I hope that this final project would be useful for the readers.

Semarang, 2019

The Writer

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ABSTRACT

Indonesian Language has loanwords taken from various languages including Tamil and Hindi. These two Indian Languages have different phonological system, and so the loanwords taken from the two languages may undergo different phonological processes. This study focuses on phonological processes of Tamil and Hindi loanwords in Indonesian Language. It also aims at finding out the kinds of phonological processes and the factors influencing the occurrence of the processes. This study is also intended to explain the similarities and the differences of phonological processes between Tamil and Hindi loanwords. The data were collected using observation non participant method. After the data were selected, I transcribed those data phonetically using Indian language transcription tools. I compared them to the standard phonetic transcription in order to get the phonological processes. The results of the analysis show: (1) shortening, (2) weakening, (3) lowering, (4) monothongization, (5) velarization, 6) alveolarization, (7) trilling, (8) gliding, (9) epenthesis, (10) de-aspiration, (11) de-affrication, (12) consonant deletion, (13) vowel de-nasalization, (14) backing process, and (15) consonants strengthening. The main factor influencing the phonological process is the difference phonological system of Tamil, Hindi and Indonesian language.

Key words:Phonological Processes, Tamil Language, Hindi Language, Indonesian Language, Distinctive Features, Generative Phonology

INTISARI

Bahasa Indonesia memiliki kata serapan dari berbagai Bahasa termasuk Tamil dan Hindi. Kedua Bahasa India ini memiliki system fonologi yang berbeda sehingga kata serapan yang berasal dari kedua Bahasa ini memungkinkan untuk mengalami proses fonologi. Penelitan ini berfokus pada kata serapan Bahasa Tamil dan Hindi ke dalan Bahasa Indonesia. Penelitian ini bertujuan untuk menemukan proses fonologi dalam kata serapan dari Bahasa Tamil dan Hindi dan factor yang mempengaruhi terjadinya proses fonologi. Penelitian ini juga dimaksudkan untuk mengungkap persamaan dan perbedaan proses fonologi yang berasal dari kata serapan Bahasa Tamil dan Bahasa Hindi. Metode yang digunakan untuk mengumpulkan data adalah observasi. Setelah data terkumpul, saya mentranskripnya kedalam bentuk fonetik menggunakan aplikasi transkripsi Bahasa India. kemudian membandingkan dengan transkripsi fonetis standar. Hasil dari analisis menunjukan adanya proses (1) pemendekan bunyi, (2) pelemahan bunyi, (3) perendahan bunyi, (4) monotongisasi, (5)velarisasi, (6) alveolarisasi, (7) perubahan bunyi trill, (8) proses peluncuran bunyi, (9) proses epentesis, (10) deaspirasi, (11) deafriksasi, (12) penghilangan bunyi konsonan, (13) proses perubahan bunyi nasal vokal, (14) proses perubahan bunyi vokal belakang, dan 15) proses penguatan bunyi konsonan. Faktor utama penyebab terjadinya proses fonologi adalah perbedaan system fonologi dari ketiga Bahasa tersebut.

Kata kunci: Proses Fonologi, Bahasa Tamil, Bahasa Hindi, Bahasa Indonesia, Fitur Distingtif, Fonologi Generatif

CHAPTER I

INTRODUCTION

This chapter describes background of the study, research problems, purposes of the study, and significances of the study, scope of the study, operational definition of key terms and organization of the writing.

1.1Background of the Study

Many languages sometimes borrow some words from other languages to get the purpose of communication. The process of borrowing is one of the proofs that all languages are bound to change. The changing can be attributed to some factors like economic, contact and also culture. Language change occurs when there is a contact between a language and other languages where words get borrowed from particularsource of language into target language. It starts from sounds,and then it creates some sound combinations that do not previously exist in the target language but later it did. One of the results of language contact is loanwords. It creates loanwordsby assimilating to the existing phonological rules of the target language.

The history of Indonesian Language shows that there is contact between Indonesia with Hindus, Islam, Dutch, English, Spanish, and Portuguese which have influenced the phonemic system of Indonesian Language. Thus, this situation gives many loanwords of other languages intoIndonesian Moreover , Jones (2008:10) mentioned there are ten donors of languages in Indonesia like Sanskrit, Hindi, Tamil, Persian, Arabic, Dutch, Chinese, Japanese, and Latin.

Some languages which give many donors of words in Indonesia are Indian languages such as Hindi, Tamil and Sanskrit.

In this study, the writer chose Tamil and Hindi to be analyzed because both languages belong to Indian languages. However, they come from different language families. Tamil belongs to Dravidian, while Hindi belongs to the indo-European language family and part of the Indo-Iranian languages, forming a subgroup called Indo-Aryan.

Wardhaugh (1972) described that loanwords as another way to add new vocabulary to languages. According to him, loanwords can be said as new words donated from other languages to add new vocabulary to the recipient's language. Then, Bloomfield (1996:445) also said that loanwords can come from foreign words or regions that enter the Indonesian vocabulary. The statement of Bloomfield proved that contact between languages can lead to the process of borrowing. Another definition of loanwords is new words borrowed from other languages and modified to be recipient language (Campbell, 1998). In summary, the loanwords that are borrowed from Tamil and Hindi will be adapted to Indonesian sound system.

Tamil and Hindis have different phonological system. This fact leads to different phonological processes that occur during the process of borrowing. According to Schane (1973:49), phonological process occurs when one of the sounds of the morpheme changes into other sound because of the influence of the other neighboring morpheme. In other words, it can be defined as a process when phonological change happens in some segments of a word.

As it can be proven in the previous explanation, many studies have been conducted to establish the phonological process of loanwords from Sanskrit, English, Dutch, Japanese, Chinese and Arabic in Indonesian Language. However, as I know, none of which has provided the analysis of the phonological processes of Tamil and Hindi loanwords in Indonesian Language. This study is aimed at filling this gap by exploring various changes in phonology that take place in Tamil and Hindi loanwords into Indonesian Language.The data serving as the basis for analysis are loanwords borrowed into Indonesian Language from Tamil and Hindi.

1.2Research Problems

There are many kinds of loanwords coming from Tamil and Hindi in Indonesian Language vocabulary which contain different features. One of the features is phonological aspect. It becomes the main problem of this research which further formulated into the following questions:

1. What are the phonological processes of Tamil loanwords in Indonesian Language?
2. What are phonological processes of Hindi loanwords inIndonesian Language?
3. What are the factors influencing the phonological processes of loanwords taken from Tamil and Hindi?
4. What are the differences and similarities of phonological processes between Tamil and Hindi Loanwords inIndonesian Language?

1.3Purposes of the Study

This study aimed to describe the phonological processes of Tamil and Hindi loanword in Indonesian Language. It also elaborates the similarities and differences of phonological processes between Tamil and Hindi loanwords in Indonesian Language. Systematically, the purposes of this studyare:

1. To describe the phonological processes of Tamil loan words into Indonesian Language.
2. To describe the phonological processes of Hindi loan words into Indonesian Language.
3. To elaborate the factors influencing phonological processes of loanwords taken from Tamil and Hindi.
4. To explain the differences and similarities of phonological processes between Tamil and Hindi loanwords in Indonesian Language.

1.4Significances of the Study

This study is expected to give theoretical and practical benefits.

1. Theoretical Significances

   This research can enrich linguistics model of phonological analysis using the theory of transformational generative phonology. The study on phonological processes of Tamil and Hindi loanwords is also an important source of information on Indonesian linguistic studies.

2. Practical Significances

   This study is expected to contribute a general knowledge about the formation of Indonesian words which are borrowed from Tamil and Hindi.

3. General Significances

   This study gives an opportunity to Indonesian Language to become *lingua franca.* This statement is constructed by the fact that Indonesian Language is able to adapt and borrow other languages, especially those in Asia.

1.5Scope of the Study

This study focuses on the description of phonological processes in Tamil and Hindi loanwords. The phonological processes cover the kinds of processes, differences and similarities of phonological processes between Tamil and Hindi, then the factors which influence the processes. The data of this study were taken from the book entitled "Loanwords in Indonesian and Malay*"* written by Russell Jones in 2008. Then, they were analyzed usingtransformational generative phonology theory.

1.5Operational Definition of Key Terms

In order to give a clear meaning of the terms used in this study, I provide some definitions related to Phonological Process, Tamil, Hindi, Indonesian Language, Loanwords and Generative Phonology.

Phonological process is a process when one of the sounds of the morpheme changes into other sound because of the influence of the other neighboring morpheme (Schane, 1973:49) .

Tamil is one of the most ancient languages of the world and the official language of the Indian state of Tamil Nadu. Tamil is also an official language in Sri Lanka, and Singapore and has significant numbers of speakers in Malaysia, Mauritius, Fiji and South Africa. Tamil belongs to member of the Dravidian language family (Siddalingaiah, 1968:4).

Hindi is the official languages of India and it belongs to the indo-European language family and part of the Indo-Iranian languages, forming a subgroup called Indo-Aryan. In India, Hindi is spoken as a first language by nearly 425 million people (Masica, 1991:27).

Indonesian Language is the official language of Indonesia. Indonesian Language as official language used in ceremonies, events, and state activities both verbal and written form. There were an estimated 180 million Indonesian at the beginning of the twenty-first century (Sneddon, 2003:70).

Loanword is a word imported into one language from another language. Loanwords can be defined as new words borrowed from other languages and modified to be recipient language (Campbell, 1998)

Generative Phonology is a theory of phonology that uses a set of rules to derive phonetic representations from abstract underlying form. It is a component of generative grammar that assigns the correct phonetics representations to utterances in such a way as to reflect a native speaker's internalized grammar. The generative point of view has become dominant in linguistics model and has had varying degrees of influence on other cognitive science. (Kenstowics: http://web.mit.edu).

1.6Organization of the Writing

This chapter is divided into five chapters and organized as follows:

Chapter one describes background of the study, problem of the study, objective of the study, significance of the study, scope of the study, definition of key terms and organization of writing.

Chapter two concerns the related literatures; it provides previous studies regarding phonological process of loanwords and theories used in this study.

Chapter three deals with research method; it provides the description of research design, data, method of data collection and method of data analysis.

Chapter four is the result and discussion of the phonological processes of Tamil and Hindi loanwords in Indonesian Language.

Chapter five is the conclusion and suggestion; it delivers the conclusion of analysis and suggestion for the next researchers.

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter contains two sections. First section is previous studies and the second section is theoretical framework of this study.

2.1 Previous Study

Previous studies became one of the writer's references in conducting the research. Previous studies are important to be presented in order to avoid duplication, plagiarism, and replication. They also used to show validity and novelty of the study. There have been some studies related to phonological processes of loanwords in Indonesian Language and other languages.

The first study related to phonological processes of loanwords in Indonesian was written by Hadi, Chamamah, & Wijana, (2003) entitled *Perubahan Fonologis Kata-kata Serapan Dari Bahasa Arab Dalam Indonesian Language*. Their study discussed phonological process of Arabic loanwords in Indonesian. The result of their research related to phonological processes of loanwords in Indonesian Language is that in borrowing process of Arabic loanwords in Indonesian Language, there is no phonological processes such as consonants cluster reduction, prosthesis and complex sound change. But, I found other phonological processes namely vowelization and contraction.

The second, Widayaningsih(2010) analyzed phonological change in Indonesian loanwords. The results of this study related to phonological process of loanwords in Indonesian Language show that there are four categories of phonological processes found in Indonesian loanwords. Those processes are

addition, reduction, dissimilation, and complex phonological changes. According to the results of her study, the phonological processes are caused by some factors such as social change, culture, and phonological system between English and Indonesian. The weakness of this study is that the writer did not explain what theory she used to analyze those loanwords.

Based on the first and the second previous studies above, there are some points of those studies that are different with my study. First, those studies discussed phonological processes of English and Arabic loanwords in Indonesian Language, yet I discuss phonological process of loanwords in Indonesia borrowing from Tamil and Hindi. Moreover, both studies do not use Transformational Generative Phonology. There are some points of this study that differ it to my study. The first study used theory of sound change by Crowley; yet, my study used Transformational Generative Phonology as basic the theory. Then, the second study, the writer only used descriptive which could not elaborate why the phonological processes occur.

The third study is comparative study of the phonological processes in Tamil speaking written by Samayan & Palani (2015). This study discussed the phonological processes in Tamil speaking children with ADHD in the age range of 7-12 years. The results of this study show that there are 22 phonological processes of ADHD children and 10 phonological processes of normal children. This study is chosen as one of the previous studies because it attempts to identify, describe and explain phonological processes of Tamil that can give some benefits information to my study.

The fourth study was written by Lestari (2016) entitled *Perubahan Fonologi Kosakata Serapan Bahasa Belanda Dalam Indonesian Language* .This study discussed phonological change of Indonesian loanwords from Dutch. In this study, she discussed phonological change of loanwords in Indonesia borrowing from Dutch. The results of this study mentioned there eight processes of phonological change found in Indonesian loanwords borrowing from Dutch. The processes are metathesis, epenthesis, paragoge, articulator change, merger, syncope, apocope, and afrensis. The differences between her study and my study are this study did not use Transformational Generative Phonology as the basic analysis. Moreover, the data used in this study are quite different with my study. The results of this study did not explain why the phonological change could happen and what the factors that could influence the changing.

The fifth study was written by Drihartati(2016) entitled *Perubahan Bunyi dan Pergeseran Makna Kata Serapan Bahasa Belanda kedalam Indonesian Language (Kajian Fonologi dan Semantik)*. Her study discussed phonological processes of Indonesian loanwords borrowing from Dutch using Transformational Generative Phonology. The results of this study show there are twelve sound changes and five group of meaning change. This study is useful for my study because it gives some additional information related to the use of Transformational Generative Phonology in phonological processes analysis of loanwords in Indonesian.

The sixth study entitled *Pola-Pola Perubahan Fonem Vokal dan Konsonan dalam Penyerapan Kata-Kata Bahasa Asing ke dalam Indonesian*

Language: Kajian Fonologi written by Putradi (2016). His study discussed phonological processes of loanwords from foreign language in Indonesia. In this study, he found there are five phonetic rules in borrowing process of loanwords from foreign language in Indonesian. The results also mentioned the phonological change in loanwords could happen because every sound is influence each other. It depends on the position or its environment.

The seventh study was written by Imamah & Himmawati (2016) "Phonological Adaptation of English Loanwords to Indonesian Words in Jawa Pos Newspaper". The results of this study found there are seven phonological processes of English loanwords in Indonesian Language but did not explain the factors that could influence the processes. In this study, the writer used phonological theory of Major (2001) to analyze the data. According to explanation above, this study will completely different with my study since I focused on phonological processes on Tamil and Hindi loanwords in Indonesian Language. Furthermore, the theory I used in my study is Transformational Generative Phonology yet this study used different theory

The eighth study was written by Kaur, Anand, & Subbarao (2017) entitled *Phonological Processes in Hindi Speaking Typically Developing Children Across Rural and Urban Areas.* This study discussed phonological processes in Hindi speaking of children.The results of this study show there are three types of phonological processes found in Hindi Speaking between children across rural and urban area. The processes are syllable structure process which contains initial consonant deletion, final consonant deletion, cluster reduction,

epenthesis, /r/ deletion, /h/ deletion, nasal substitution, and initial vowel deletion. Moreover, there are also assimilation processes that consist of l/r substitution, gliding, vowelization, devoicing, velar fronting, assimilation, assimilation, vowel lowering, and vocalization. The last process is substitution processes which contains stopping, backing, fronting, affrication, de-affrication, de-nasalization, de-aspiration, and vowel shortening. This study give some benefits to my study because this study provides detailed understanding of phonological development among Hindi and also provides basis for planning of phonological remediation.

The ninth study was written by Nafisah (2017) entitled "Proses Fonologis Dan Pengkaidahannya Dalam Kajian Fonologi Generatif". This study discussed phonological processes of some languages such as Arabic, Zoque, and Javanese. This study also used Transformational Generative Phonology as the basic theory in analyzing the data. The results of this study show that phonological change is caused by affixation. This study chose to be one of my previous studies because it can give more information related to phonological processes analysis using Transformational Generative Phonology.

The tenth study was written by Mallya(2018) entitled *Phonological Processes in Chagga Nativized Lexime Borrowed from Standard Swahili : A Chagga - English Comparative Study*. This study discussed phonological process using theory of Generative CV Phonology by Keyser and Clements (1983). The results of this study found seven types of phonological processes in Chagga loanwords such as insertion, deletion, assimilation, and voicing, devoicing, vowel lengthening and feature change. This study can give some additional

information related to phonological processes of loanwords using another theory instead of Transformational Generative Phonology.

According to previous studies mentioned above, the writer discovered that there are no researchers that have done research related to phonological process of Indonesian loanwords borrowing from Tamil and Hindi. In this study, the writer explains about the phonological processes and linguistic factors that could influence the sound changes using Transformational Generative Theory. This study also shows the similarities and the differences of phonological processes in Indonesian loanwords borrowing from Tamil and Hindi.

2.2 Theoretical Framework

This section consists of the explanation related to transformational generative phonology, phonological processes, phonological rules, Distinctive features, and phonological system of Tamil, Hindi and Indonesian Language.

2.2.1 Transformational Generative Phonology

The sound system of a language can be studied from two broad perspectives, namely, phonetics and phonology. Phonology is the branch of linguistics which investigates the ways in which sounds are used systematically in different languages to form words and utterances (Katamba, 1989). While phonetics tells us how the sounds of language are produced and what their articulatory, acoustic and auditory properties are, phonology studies how these sounds are structured and how they function to convey meanings in a particular language.Moreover, Odden (2005)adds that phonology deals with the structure

of language. It is quite different from study of sentence structure and word structure. According to the statement of Katamba and Odden, it can be concluded that the aim of phonology is to discover the principles that govern the way sounds are organized in language. It also explains the variation of sound pattern that occur. It means that studying phonology deals with the form of language sound system and the way of human producing sound.

In this study, I use Transformational Generative Phonology as the basic theory in conducting the analysis. Generative phonology is different from the structural phonology. Structural phonology is an offshoot of structural grammar, which emphasizes the study of the structures of language; hence, the emphasis on the dichotomy between 'substance' and 'form'; phonemic and morphemic status; and analytical or discovery procedure. This leads to the setting up of the principles of contrast and complementarily. If two sounds occurring in the same environment, when substituted bring about a meaning change, they must be considered as two separate phonemes, for example the sound /p/ and /b/ in "pat" and "bat"; /t/ and /d/ in "mat" and "mad". The pair of words containing such sounds is said to be a minimal pair.

Generative phonologywas launched by Chomsky and Halle in 1968. Crystal, (2008:119) explains the term generative was introduced by Noam Chomsky in 1957 through his book *Syntactic Structure*s. There are two branches of generative linguistics namely generative phonology and generative syntax mentioned by Crystal. Generative phonology has become the most common used theory to conduct phonological studies. Moreover, Jensen, (2004:4) declared the

generative phonology as a basic introduction to phonological theory and practice. This theory also establishes a set of rules to produce the surface phonetic form of a language.

Generative phonology also leads to a concept of allophones and syllables which proved that speech sounds are changed with different contexts. Al-Hindawi & Al-Aadili, (2018:7) states that generative phonology is an approach of generative linguistics which is aimed to eliminate and factor out redundancy from phonological analysis by using phonological rules. There are formal properties related to generative rules mentioned by Hayes (2009:122). First, generative rules are sequentially ordered re-writing rules. It means that the phonological rules change or transform from one symbol into another. Second, generative rule is applied sequentially rather than simultaneously. This statement means each rule creates as output a new intermediate level of representation which serves as input to the next rule. Moreover, Al-Hindawi & Al-Aadili, (2018:8-9) also mentioned there are components of generative phonology. The components contain phonological rules, levels of phonological representations, derivation, linearity, and distinctive features.

2.2.2 Phonological Processes

Phonological process is formalized as phonological rule. It is a process that turns phonemic representation into phonetic representation. Phonological process is aimed to simplify production of complex word. According to Schane(1973), there are four categories of phonological processes in

phonological research. Those processes are assimilation, syllabic structure, weakening and strengthening, and neutralization.

1. **Assimilation**

According to Schane(1992:49), assimilation process occurs when a segment become more similar in certain features. This statement means, assimilation process is the changing of sound into another sound which is influenced by the environment of neighboring sound. Assimilation process covers consonants assimilate with vowels features, vowels assimilate with consonant feature, consonants assimilate with consonants features and vowels assimilate with vowels features.

2. **Syllable structure**

Syllable structure processes consist of consonants deletion, vowel deletion, epenthesis, consonant coalescence, vowel coalescence, coalescence vowel and consonant, major class change, and metathesis. In syllable structure process, Schane (1992:54) argue that this process can influence the distribution between consonant and vowel. The statement means that in syllable structure process, both consonant and vowel can undergo coalescence and deletion.

3. **Weakening and strengthening**

This process occurs if there is a change from simple syllabic structure leading to a complex syllabic structure. Some processes which are included in weakening and strengthening are syncope and apocope, diphthongization and vowel shift.

a. Apocope

Crystal (2008:30) defines apocope as a process of deleting the final element of word. For example: And =/ən/

b. Syncope

Syncope is defined as a process deletion of the vowel within a word. For example: secretary = /sekritri/.

c. Diphthongization

Diphthongization occurs when a monophthong sound change to be diphthong sound as in the cases of historical change (Crystal, 2008).

d. Vowel shift

Giegerich (1992:305) describes vowel shift as a two way distinction between the members of both pairs of vowels. For example: deep [i] - depth [ɛ].

4. **Neutralization**

Schane (1973:50) describesthe neutralization as the reduction of phonological differences in particular environment. It means that this process happen when a sound which has phonological distinction is reduced in particular environment. There are two processes of neutralization namely consonants neutralization and vowel neutralization.

Moreover, the phonological processes mentioned in this study are also adapted from Bowen (2011). Bowen (2011) also mentioned there are three categories of phonological processes namely, substitution, assimilation and syllable structure. Those processes are divided into some types of processes. As

an illustration, I provide the table of phonological processes adapted from Bowen (2011) as follow:

Table 2.1: Phonological Processes

Substitution	Definition	Example
Vowel shortening	When vowel with plus long features changing into minus long	[u:] --- [u]
Backing	Occurs when alveolar sound like /t/ or /d/ are substituted with velar sound like /k/ or /g/	"gog"for "dog"
Fronting	When velar or palatal sounds, like /k/, /g/, and sh, are substituted with alveolar sounds like /t/, /d/, and /s/	"tootie" for "cookie"
Gliding	When /r/ becomes a /w/, and /l/ becomes a /w/ or y sound	"yeyo" for "yello"
Stopping	When a fricative (like /f/ or /s/) or affricate (ch,j) is substituted with a stop consonant like /p/ or /d/	"dump" for "jump"
Vowelization	When the /l/ or er sounds are replaced with a vowel	"papuh" for "paper"
Affrication	When a non-affricate is replaced with an affricate (ch or j)	"joor" for "door
De-affrication	When an affricate is replaced with a fricative or stop	"ships" for "chips"
Alveolarization	When a non-alveolar sound is substituted with an alveolar sound	tu" for "shoe"
De-palatalization	When a palatal sound is substituted with a non-palatal sound	"fit" for "fish"
Labialization	When a non-labial sound is replaced with a labial sound	pie" for "tie"
Assimilation	**Definition**	**Example**
Assimilation	When a consonant sound starts to sound like another sound in the word	"bub" for "bus"
De-nasalization	When a nasal consonant changes to a non-nasal consonant	"doze" for "nose"
Final Consonant Devoicing	When a voiced consonant at the end of a word is substituted with a voiceless consonant	"pick" for "pig"
Prevocalic Devoicing	When a voiceless consonant in the beginning of a word is substituted with a voiced consonant	"gomb" for "comb"
Coalescence	When two phonemes are substituted with a different phoneme that still has similar features	"foon" for "spoon"

Reduplication	When a complete or incomplete syllable is repeated	"baba" for "bottle"
Syllable Structure	**Definition**	**Example**
Cluster Reduction	When a consonant cluster is reduced to a single consonan	"pane" for "plane"
Final Consonant Deletion	When the final consonant in a word is left off	toe" for "toad"
Initial Consonant deletion	When the initial consonant in a word is left off	"unny" for "bunny"
Weak syllable deletion	when the weak syllable in a word is deleted	"nana" for "banana"
Epenthesis	When a sound is added between two consonants, typically the uh sound	bu-lue" for "blue"

2.2.3 Phonological Rules

Phonological rules are the rule which is created for showing the process of sound change. Schane (1992:62) argued that in phonological process, when we can determine the conditions for the process, it means, we have created set a phonological rule. The statement means rules can be created when a sound undergoes phonological processes or sound changes. In phonology generative, phonological rules belong to important part. Schane (1992:62) mentioned there are four types of phonological rules namely feature changing rules, variable rules, permutation and coalescence rule, then insertion and deletion rules. The assimilation, and dissimilation are belonging to variable rule, then the rule of assimilation, dissimilation and feature change are same. The explanation related to phonological rules is described as follow:

1. Feature changing, assimilation and dissimilation rules

The rule of feature changing is similar to assimilation rule and dissimilation rule. Basically, in phonological process of assimilation and dissimilation always involve the changing of distinctive feature. The pattern of phonological rule to show feature changing, assimilation process, and dissimilation process is depicted as follow:

A→B or [-voiced] → [+voiced]

The rule above describes that segment of sound a changing into segment sound B or voiced sound changing into voiceless sound.

2. Deletion and insertion rules

The symbol commonly used in the deletion and insertion rules is**ø.** Pattern of deletion and insertion rules are described below:

A→ Ø

The pattern above is rules of deletion process, in deletion process sound which is eliminated placed on the left the arrow, then for symbol Ø is placed on the right.

Ø→A

Insertion rules can be depicted as the pattern above. The pattern of insertion contrast with deletion pattern which is the segment is placed on the right of arrow then the symbol Ø is placed on the left.

3. Permutation and coalescence rules

Coalescence is a phonological process when two sounds are combined into a single sound that has the properties of each of the two original sounds. The

sounds which are produced often have a place of articulation of one of the source sounds and another manner articulation. The example of coalescence rule is described below:

[ab] → c /#___

The rule above explains that segment /a/ and /b/ is combined and form into another segment /s/. Then, the permutation rules or metathesis, this rule is used to show metathesis process and the changing of segment order. In metathesis and permutation process, Schane (1992:69-70) clarified that in this process not only occur the changing of segments order but also it can be accompanied sound changes, coalescence, deletion and insertion sound. The example of permutation rules is conceived as follow:

[ab] →[ba]/___#

2.2.4 Phonological System of Hindi, Tamil and Indonesian Language

This section contains the explanation of phonological system of Tamil, Hindi and Indonesian Language. It also displays the comparison of consonants and vowels in Hindi, Tamil and Indonesian Language.

Tamil phonology is characterized by presence of retroflex consonants, and multiple rhotics and nasals.Unlike Indo-Aryan languages spoken around it, Tamil does not have aspirated consonants. In speech, word final nasals are cut, and the vowel before it is nasalized. On the other hand, Hindi has 15 aspirated consonants. In Hindi, 11 aspirated consonants are represented by separate characters e.g. ख [k^h], भ [b^h], etc. The remaining 4 consonants are represented by

combining a simple consonant to be aspirated and the conjunct form of HA ह[h], e.g. ल [l] + ◌् + ह [h] = ल्ह [l^{h}].Hindi has 11 vowels and 10 of them have nasalized forms. They are represented by 11 independent vowel symbols e.g. आ [ɑ], ऊ [u], औ [ɔ], etc. and 10 dependent vowel symbols e.g. ◌ा [ɑ], ◌ू [u], ◌ौ [ɔ], etc. called *maatraas.* When a vowel comes at the start of a word or a syllable, the independent form is used; otherwise the dependent form is used (Kellogg, 1872; Montaut, 2004).

The phonological systems of Indonesian Language show that there are six vowels in Indonesian.In standard Indonesian orthography, the Latin alphabet is used, and five vowels are distinguished: *a, i, u, e, o*. In materials for learners, the mid-front vowel /e/ is sometimes represented with a diacritic as *é* to distinguish it from the mid-central vowel /ə/.Indonesian Languagealso has four native diphthong phonemes only in open syllables. In order to give the infomation more specific, I made the comparison of consonants, vowels and dipthongs of Tamil, Hindi and Indonesian Language below.

2.2.4.1 Consonants

Consonants are classified into two parts of articulation namely manner of articulation and place of articulation. The manner of articulation consists of plosive, nasals, fricatives, laterals, tap/flap, lateral approximants, approximants and trills. Furthermore, place of articulation is divided into 11 parts. Those parts are bilabial, labio-dental, dental, alveolar, post-alveolar, retroflex, and palatal, velar, uvular, pharyngeal and glottal. As an illustration, I made the consonants distribution in Tamil, Hindi and Indonesian Language in the following table.

Table 2.2: Consonants in Tamil, Hindi and Bahasa Indonesia

Places of Articulation																			
Manner of Articulation	Language	billabial		Labio-dental		dental		alveolar		Post Alveolar		retroflex		palatal		velar		glottal	
		voiced	voiceless	voiced	voice less	voiced	voice less	voiced	voiceless	voiced	voiceless	voiced	voiceless	voiced	voiceless	voiced	voiceless	voiced	voiceless
Stops	H	b/b^h	p/p^h					d/d^h	t/ t^h			ɖ/ɖ^h	ʈ/ ʈ^h	ɟ/ ɟ^h	c/ c^h	g/g^h	k/ k^h		
	T	b	p			ð	θ					ɖ	ʈ	ɟ	c	g	k		
	B.I	b	p					d	t					ɟ	c	g	k		ʔ
Nasal	H	m						n				ɳ		ɲ		ŋ			
	T	m				n̪		n				ɳ		ɲ		ŋ			
	B.I	m						n						ɲ		ŋ			
Trill	H							r											
	T							r											
	B.I							r											
Tap/Flap	H											ɽ							
	T							ɾ											

	B.I																		
Fricatives	H				f			z	s		ʃ	ʂ				ɣ	x		h
	T								s	ʒ	ʃ								h
	B.I			v	f			z	s		ʃ					x			h
Approximant	H			ʋ										j					
	T			ʋ								ɬ		j					
	B.I	w												j					
Lateral	H							l											
	T											ɭ							
	B.I							l											
Sibilant Affricate	H									ʤ/ʤʰ	ʧ/ʧʰ								
	T																		
	BI																		

The table above shows the differences of consonant distribution between Tamil, Hindi and Indonesian Language. First, Indonesian Language has bilabial approximant sound /w/ while Tamil and Hindi do not have that sound. Second, Indonesian Language and Hindi have voiceless labio-dental fricative /f/ while Tamil does not have the sound. Third, Indonesian Language has voiced labiodentals fricative /v/ but both Tamil and Hindi do not have that sound. Fourth, both Tamil and Hindi have labiodentals approximant /ʋ/ while in Indonesian Language that sound does not exist. Fifth, Tamil has dental plosive sounds /ð/, /θ/ and dental nasal sound /n̪/ whereas those kinds of sound do not exist in Hindi and Indonesian Language.

Both Tamil and Hindi also have nasal palatal /ɲ/ yet Indonesian Language does not have that sound. Sixth, both Tamil and Hindi have tap or flap sounds /ɽ/ and /ɾ/ while Indonesian Language does not have those sounds. Seventh, in lateral sounds, Tamil has retroflex lateral /ɭ/ yet that sound does not exist in consonants system of Hindi and Indonesian Language. Eighth, in Hindi there are some aspirated sounds while Tamil and Indonesian Language do not have aspirated sounds. Ninth, there is a plosive glottal sound /ʔ/ in consonants system of Indonesian Language but that sound does not exist in Tamil and Hindi.

2.2.4.2 Vowels

Jones (1972:23) defined a vowel as a voiced sound in forming which the air issues in a continuous stream through the pharynx and mouth, there being no obstruction and no narrowing such as would cause audible friction.The vowels are classified based on two criteria that are tongue position and lip position. In tongue position, it is divided into two categorizes namely height of tongue and rising of part of the tongue. Height of tongue consists of close vowels, half-close vowels, half-open vowels, and open vowels. Moreover, rising of part of the tongue contains front vowels, central vowels and back vowel.

Another criterion of vowel is lip position. Lip position is divided into two parts that are rounded and unrounded. The distributions of vowels between Tamil, Hindi and Indonesian Language are different. For instance, the writer made table of vowels distribution in Tamil, Hindi and Indonesian Language as follow.

Table 2.3: Vowels in Tamil, Hindi and Indonesian Language

Tongue Height	Language	Tongue Position					
		Front vowels		central vowels		Back vowels	
		Short	Long	Short	Long	Short	Long
High	**TAMIL**	i	i:	-	-	u	u:
Mid		e	e:	ə	-	o	o:
Low		-	-	a	-	ʌ	ɑ:
High	**HINDI**	i	i:	-	-	u	u:
Lower-high		-	-	-	-	-	-
Mid		e	e:	ə, ɛ	ɛ:	o	o:
Low		-	-	a	-		ɑ:
High	**I.L**	-	-	-	-	u	-
Mid		i	-	ə, ɛ		o	-

Low		e	-	a	-	-	-

The table above shows that there are some vowels in Hindi and Tamil which is not found in Indonesian vowels system. Based on the table above, the difference shows that both Tamil and Hindi have long vowels while vowels system in Indonesian Language do not have long vowels. Then, the difference also shows that there is vowel /ʌ/ in Tamil but it does not exist in vowels system of Hindi and Indonesian Language.

2.2.4.3 Comparison of Consonants and Vowel Distribution in Tamil, Hindi and Indonesian Language.

In order to give the description of the distributions of consonants and vowels in Tamil, Hindi and Indonesian Language, I focused on the elements of Hindi and Tamils which are absents in Indonesian Language. The table below is displayed to give the detail related to consonants and vowels in Tamil, Hindi, and Indonesian Language

2.4 Distributions of consonants and vowel in Tamil, Hindi and Indonesian Language

NO	PHONEMES	AVAILIBILITY			DISTRIBUTION								
					INITIAL			MEDIAL			FINAL		
		I.L	Tamil	Hindi	I.L	Tamil	Hindi	I.L	Tamil	Hindi	I.L	Tamil	Hindi
1	p	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes
2	b	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no
3	k	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes
4	g	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes
5	d	yes	no	yes	yes	no	yes	yes	no	yes	yes	no	no
6	t	yes	no	yes	yes	no	yes	yes	no	yes	yes	no	yes

7	ʤ	no	no	yes	no	no	yes	no	no	yes	no	no	no
8	ʧ	no	no	yes	no	no	yes	no	no	yes	no	no	yes
9	c	yes	yes	no	yes	yes	no	yes	yes	no	yes	no	no
10	j	yes	yes	no	yes	yes	no	yes	yes	no	yes	no	no
11	ʈ	no	yes	yes	no	no	yes	no	yes	yes	no	no	yes
12	ɖ	no	yes	yes	no	no	yes	no	yes	yes	no	no	no
13	ð	no	yes	no	no	yes	no	no	yes	no	no	no	no
14	θ	no	yes	no	no	yes	no	no	yes	no	no	no	no
15	m	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
16	n	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
17	ɳ	yes	yes	yes	yes	no	no	yes	yes	no	yes	yes	yes
18	ɲ	no	yes	yes	no	yes	no	no	yes	yes	no	no	no
19	ŋ	yes	yes	yes	yes	no	no	yes	yes	yes	yes	no	yes
20	ʔ	yes	no	no	yes	no	no	yes	no	no	no	no	no
21	r	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes
22	ɽ	no	no	yes	no	no	no	no	no	yes	no	no	yes
23	ɾ	no	yes	no	no	no	no	no	yes	no	no	yes	no
24	f	yes	no	yes	yes	no	yes	yes	no	yes	yes	no	yes
25	v	yes	no	no	yes	no	no	yes	no	no	no	no	no
26	z	yes	no	yes	yes	no	yes	yes	no	yes	yes	no	yes
27	s	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
28	ʃ	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes
29	ɣ	no	no	yes	no	no	yes	no	no	yes	no	no	yes
30	x	yes	no	yes	yes	no	yes	yes	no	yes	yes	no	yes
31	ʊ	no	yes	yes	no	yes	yes	no	yes	yes	no	yes	no
32	y	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
33	ɭ	no	yes	no	no	no	no	no	yes	no	no	yes	no
34	l	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
35	h	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	no	yes
37	a	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
38	i	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
39	u	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
40	e	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

41	o	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no
42	ə	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
43	ɛ	no	no	yes	no	no	yes	no	no	yes	no	no	yes
44	ɑː	no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
45	oː	no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
46	uː	no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
47	iː	no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
48	eː	no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes
49	ɛː	no	no	no	no	no	yes	no	no	yes	no	no	yes

The table above shows the distributions of consonants and vowels in Tamil, Hindi and Indonesian Language. The consonants and vowels distributions in Hindi areadapted from Kumary (1996), Ohala (1983),Kachru (2006). Then, The distributions of Tamil consonants and vowels are adapted from Malini (1993). The distributions of consonants and vowels in Indonesian Language is adapted from Chaer (2009) and Halim (1984:136-150). By looking at the table above, there are some differences related consonants and vowels distributions in Tamil, Hindi and Indonesian Language. The differences of consonants distribution show that the plosive sounds [p],[b],[k],[g],[c],[j] in Indonesian Language can occur in the initial, medial and final position but in Hindi and Tamil those sounds only occur in the initial and medial position.

Moreover, nasal sounds [m], [n], [ŋ] occur elsewhere in Indonesian Language yet in Hindi the nasal sound [ŋ] occurs in medial and final position. Thus, in Tamil it occurs only in medial position. In vowels distribution, each vowel of Indonesian Language only has one allophone but in Tamil, there some sounds which have more than one allophone.

2.2.4.4 Diphthongs

Diphthong is a combination of two vowels within the same syllable. The distributions of diphthong sound in Tamil, Hindi and Indonesian Language are different. As for an illustration, I made the table related to Diphthong sounds in Tamil, Hindi and Indonesian Language as follows:

2.5 Diphthongs in Tamil, Hindi and Indonesian Language

NO	PHONEMES	DISTRIBUTION								
		INITIAL			MEDIAL			FINAL		
		I.L	T	H	I.L	T	H	I.L	T	H
1	aj	no	yes	yes	No	yes	no	yes	yes	yes
2	aʊ	yes	yes	yes	No	yes	no	yes	no	yes
3	oj	no	no	no	No	no	no	yes	no	no
4	ə̆j	no	no	no	No	no	no	yes	yes	no

The table above shows the differences of diphthongs sound in Tamil, Hindi and Indonesian Language. In Tamil, Malini (1993)mentioned that Tamil has diphthong sounds [aj], [ə̆j] and [aʊ]. The diphthong [aj] in Tamil occurs elsewhere while the diphthong [aʊ] only occurs in initial and medial position. In Hindi, there are also two diphthongs sounds namely [aj] and [aʊ], but Ohala (1983) explained that those sounds in Hindi have transformed to monophthongs [ɛ:] and [ɔ]. Moreover, Ohala (1983) also adds that in some cases the diphthong sounds in Hindi do occur in allophonic variation for example, when the sound is followed by a semivowel. Then, in Indonesian Language, Chaer (2009) mentioned that there are only one type of Diphthongs in Indonesian Language namely raising diphthong. There are four diphthongs in Indonesian Language such as [aj], [au], [oj], and [ə̆j] which only occur at the final position.

2.2.5 Distinctive Features

The use of distinctive features in this study is intended to differentiate the phonemes from one to another. The main purpose of this theory is to discover the minimum characteristics that can be used to distinguish significant sounds, thus distinguishing between languages. Some scholars such as Jacobson, Halle,

and Chomsky have important role to decide the distinctive feature which appropriate with the language used because they have different opinion related to distinctive feature theory. Based on Simanjutak (1990:62), the use of distinctive feature in Indonesian Language tends to agree with Chomsky and Halle's opinion.

Based on Schane (1992:26-34), the distinctive feature is classified into five classes, namely major of feature, manner feature, body of tongue, subsidiary feature and the last is place of articulation feature. The explanations of those features are described as follows:

1. Major class features

Three major class features which are used to classify the segments are [±]syllabic, [±]sonorant and [±]consonantal. Vowels are syllabic and generally sonorant consonants may be syllabic and glides are non-syllabic. Vowels, glides, nasal, and liquid are sonorant whereas stops, affricates and fricatives are minus sonorant. Vowels are minus consonantal while stops, affricates, fricatives, nasal, and liquids are consonantal. These three major class features can be placed in a matrix as below:

2.6 Major Class Features

	Vowels	**Glides**	**Liquids**	**Nasals**	**Obstruent**
Syllabic	+	-	-	-	-
Sonorant	+	+	+	+	-
Consonantal	-	-	+	+	+

The syllabic feature is necessary to differentiate vowels from glides. Liquids, nasals, and glides are generally voiced and they are sonorant. Stops, affricates, fricatives, nasal and liquids are plus consonantal because they are produced with constriction in the oral cavity while the vowels and glides are produced without the constriction in the oral cavity, so they belong to minus consonantal.

2. Manner features

Schane (1973) explained that manner features consist of five features. Those features are [±] continuant, [±]nasal, [±]delayed released, [±] strident, and [±]lateral. As we know that stops, affricates and fricatives are non-sonorant or we called obstruent. In order to differentiate those sounds, we can use [continuant] and [delayed released]. Stops and affricates are differentiated from fricatives by using [continuant] feature. Then, stops can be differentiated from affricates by using [delayed release] feature. The [delayed release] is used to differentiate stops and affricates since the release of the arrested air of stops sounds is abrupt whereas in affricates the release of the arrested air is delayed. For an illustration, I made the matrix to show how these two features differentiate the non-sonorant as follows:

2.7 Continuant and delayed release features in non-sonorant sounds

FEATURES	SOUNDS

	stops			affricates		fricatives	
	p	t	k	ʧ	ʤ	s	ʃ
Continuant	-	-	-	-	-	+	+
Delayed Release	-	-	-	+	+	-	-

The table above shows that stops sound are [-cont, -del.rel]. Then, affricates sound is [-cont, +del.rel], and fricatives sound are [+cont, -del. rel]. Beside of [continuant] and [delayed release] feature, manner of articulation features also consist of [±]nasal and [±]lateral. The features [nasal] and [lateral] are used to distinguish nasals sound and laterals sound.

3. Place of articulation features

The places for consonants articulation are categorized into some principles like bilabial, labio-dental, dental, alveolar, post-alveolar, palatal velar and glottal. As for an illustration, the table below shows the places of articulation of consonants.

2.8. Places of Articulation

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k g	q G		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	N		
Trill	B			r					R		
Tap or Flap				ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

The table above is adopted from Odden (2005:39), the table shows the place articulation of each consonants. It can be seen from the table above that sounds [p], [b] and [m] belong to bilabial sound. Then, sounds [f] and [v] belong

to labiodentals, sounds [k], [g] and [ŋ] is velar. Moreover, there are sounds [t],[d], [n],[r],[s],[z], and [l] which belong to alveolar. In addition, Schane (1973) divided places of articulation features for consonants into two categories. These features consist of coronal and anterior. For instance, I made the table related to the coronal and anterior features of some consonants as follows:

2.9 Place of Articulation in Some Consonants

	p	b	t	ţ	d	g	k	m	n
Anterior	+	+	+	+	+	-	-	+	+
Coronal	-	-	+	+	+	-	-	-	+

The coronal sounds are produced with raised tip of the tongue. Furthermore, the anterior feature is aimed to distinguish sounds that are produced in front of alveo-palatal region and those which are produced in at back of alveo-palatal region. The consonants are classified into [±] coronal and on the basis of the position of tip of tongue from the neutral position.

4. Body of tongue features

Body of tongue features are used to distinguish the vowels. The tongue features consist of [±]high, [±]low and [±]back. These three features high, low and back are defined on the basis of the position and direction of the movement from neutral position of tongue. The neutral position of tongue can be imagined as vowel [e] in the English word “bed”. The vowels are distinguished by these features as given in the table below:

2.10 Body of Tongue features

	i	i:	u	u:	a	a:	e	e:	o
high	+	+	+	+	-	-	-	-	-
low	-	-	-	-	+	+	-	-	-
back	-	-	+	+	-	-	-	-	+
round	-	-	+	+	-	-	-	-	+

The vowels can be said as high vowel if the tongue moves above to the neutral position whereas if the tongue moves low from the neutral position, it is said to be low. Moreover, if the tongue moves back from the neutral position, the vowel is said to be back. From the table above, it can be seen that the [+] high vowels are /i/ and /u/, and vowel / a/ is [+] low. Then, mid vowels such as /e/ and /o/ are [-high,-low]. The back vowels may be produced by rounding lips whereas the front vowel is produced without rounding lips. Furthermore, the round feature is used to differentiate rounded vowels and unrounded vowels. On the table above, tense feature is used to differentiate long vowels and short vowels.

The features [±]high and [±]back are also used to differentiate the sound /c/ and /k/. The sound [c] is produced when the front of the tongue is above and forward to the neutral position. Therefore, it has features [+high] and [-back]. Then, the sound [k] is produced when the back of tongue is high and backward from the neutral position, Therefore, it has features [+high] and [+back]. The same features are also used to distinguish palatal and velar nasal.

5. Subsidiary features

Schane (1973:32) mentioned there are four features belong to subsidiary features. Those features are [±]tense,[±] voiced,[±] aspirated, and [±]glottalized. The features tense in vowels is used to differentiate long vowels and short vowels. But, the features tense also relevant with consonants. The consonants which have features minus tense [-tense] is categorized into *lax*. For instance, I made the table related to subsidiary features as follows:

2.11 Subsidiary Features

[+tense]	[-tense] or *Lax*
[+voiced]	[-voiced]
[+aspirated]	[-aspirated]
[+glottalized]	[-glottallized]

The difference between [tense] and [lax] can be seen in the manner in which the articulator movement is carried out. In lax consonants, the movement of articulator organs is rapid whereas in tense consonant the articulator organs are move slowly. It can be concluded that tense consonants have longer duration while the lax consonants have short duration.

These features are possible to differentiate the consonants in Tamil, Hindi and Indonesian Language. While, the feature voiced is used to differentiate voiced and voiceless sound. All the sonorant sounds belong to voiced. Then, the aspirated feature is used to distinguish aspirated sounds with unaspirated sounds. The last, glottalized feature is used to differentiate the glottalized sounds and

non-glottalized sounds. Based on the explanation above, I made the table related to the features of vowels and consonants as follows:

2.12 Distinctive Features of Vowels in Tamil, Hindi and Indonesian Language

DISTINCTIVE FEATURES OF VOWELS															
Tamil		[ʌ]	[ɑ:]	[i]	[i:]	[o]	[o:]	[e]	[e:]	[u]	[u:]			[ə]	[a]
Hindi			[ɑ:]	[i]	[i:]		[o:]		[e:]	[u]	[u:]	[ɛ]	[ɔ]	[ə]	[a]
I.L				[i]		[o]		[e]		[u]		[ɛ]	[ɔ]	[ə]	[a]
DISTINCTIVE FEATURES															
Major Class Fearure	*Syl*	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]
	Son	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]	[+]
	Cons	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]
Body of Tongue	*High*	[+]	[-]	[+]	[+]	[-]	[-]	[-]	[-]	[+]	[+]	[-]	[-]	[-]	[-]
	Low	[-]	[+]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]	[-]
	Back	[-]	[+]	[-]	[-]	[+]	[+]	[-]	[-]	[+]	[+]	[-]	[+]	[-]	[-]
	Front	[-]	[-]	[+]	[+]	[-]	[-]	[+]	[+]	[-]	[-]	[+]	[-]	[-]	[+]
	Round	[-]	[-]	[-]	[-]	[+]	[+]	[-]	[-]	[+]	[+]	[-]	[+]	[-]	[-]
Subsidiary Features	*Tense*	[-]	[-]	[+]	[+]	{+]	{+]	[+]	[+]	[+]	[+]	[-]	[-]	[-]	[+]
	voiced														
	asp														
	Long	[-]	[+}	[-]	[+]	[-]	[+]	[-]	[+]	[-]	[+]	[-]	[-]	[-]	[-]

It can be seen on the table above that there are differences between vowels in Tamil, Hindi and Indonesian Language. In Indonesian Language, there are no long vowels but Tamil and Hindi both have long vowels. Then, phonetic features such as / b. d, g, z, s, / do not exist in the final positions of the word of Bahasa Indonesia. Moreover, phonemic features: / p, t, k / are never aspirated in Indonesian words wherever they occur,

The differences make learners of Indonesian language in much difficult in learning Tamil and Hindi, particularly in learning sound systems since Indonesian language has its own sound systems that are different from any other languages, and so does the Tamil and Hindi.But,this differencealso can lead into phonological processes. Beside the differences of vowels between Tamil Hindi and Indonesian Language, I also made the following table to compare the features of consonants in Tamil, Hindi and Indonesian Language.

The table below shows the features in Tamil, Hindi and Indonesian Language. There are some sounds in Indonesian Language that are intentionally not included in the table such as, [f], [x], [z], [ʒ], [q] and all of the sounds which have no relation with the phonological process that I found in Tamil and Hindi loanwords into Indonesian Language.

2.13 Distinctive features of Consonants in Tamil, Hindi and Indonesian Language

| DISTINCTIVE FEATURES OF CONSONANTS | | |

	Dist	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Tense	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	voiced	-	+	-	+	+	+	+	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	asp	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	-
Subsidiary Features	*Long*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

CHAPTER III
RESEARCH METHODS

This chapter explains the strategies I used in analyzing the data. It takes several successive stages of strategies such as: data collection, data analysis and presentation of data analysis.

3.1 Research Design

In this case I used the design of descriptive-qualitative study. Descriptive research can be defined as a study that is designed to obtain information concerning the current status phenomena. Descriptive method used to examine the status of a group of people, objects, set of condition, and thinking systems. Moreover, Isaac & Michael (1987) also described descriptive method as a systematic, factual, and accurate in describing a situation of the area. Thus, researcher did not use numbers in collecting data and in giving an interpretation of the results.

3.2 Data and Data Source

Data of this research were the loanword in Indonesian Language borrowed from Tamil and Hindi. This data was taken from loanwords dictionary by Jones (2008). The book was chosen to be the data source because it contains some loanwords in Indonesian and Malay. The words were collected by the language researcher then are summarized into one book. Moreover, Jones (2008)

as the author completed this book by giving the meaning and information about the origin of loanwords.

3.3 Method of Data Collection

The focus of this study is phonological process in loanwords borrowed from Tamil and Hindi. Thus, the data of this study are word lists in the form of phonetic transcription. In this study, I used *observation* method. This method was used to listen or observe the use of language. The research technique I used in this study was the noting technique. This technique was used by writing down the loanwords of Tamil and Hindi language into Indonesian Language. Then, I transcribed the data from Indonesian Language into phonetic transcription to know a particular part of the words. I also compared them to the standard phonetic transcription (KBBI) in order to get the form of phonological processes. The data of Tamil and Hindi Loanword can be converted from orthography form into phonetic form by comparing the orthography system with sound system of the language. Thus, I got the rules that can be used as reference in converting the data. To make sure that all the data were transcribed correctly, I also tried to transcribe the data using translation application tools.

The data from Tamil were transcribed phonetically by using two applications related to Indian language transcription tools. The applications are *NHM* converter and *Anunaadam* Tamil transcription tool. The NHM converter was used to transcribe the Roman with diacritics into *Tolkappiyam*. The example can be seen in the following figure.

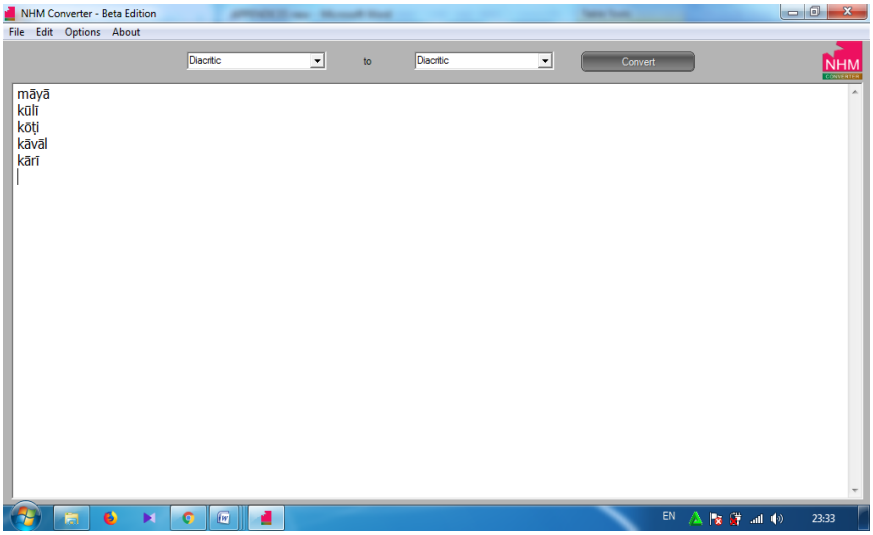

Figure 1 Roman script with diacritics

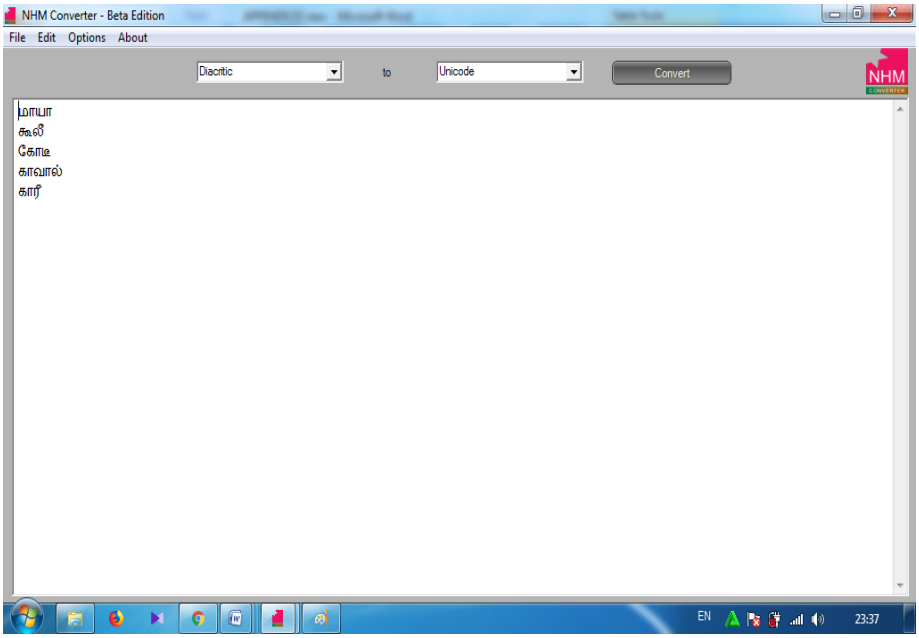

Figure 2 Tamil script

The figures above were steps in transcribing the Roman script that I got from the data of Tamil loanwords into *Tolkappiyam*. After that, the words from Tamil were transcribed phonetically using *Anunaadam* or Tamil transcription tools. The figure can be seen as follows:

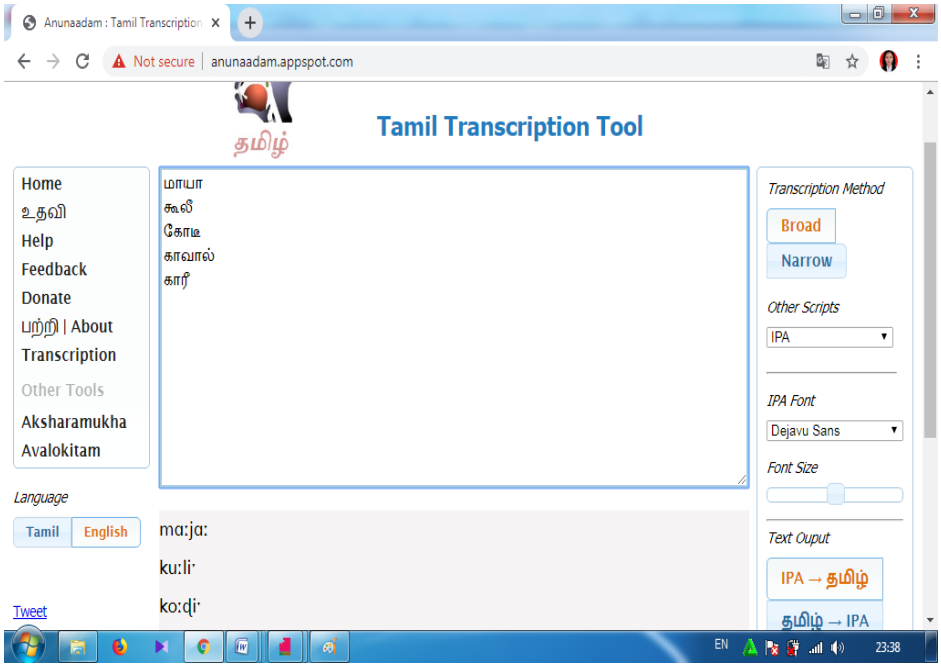

Figure 3 Word to phonetic transcription

The figure above showed*Tolkappiyam*was changed into phonetic transcription. All of the data are transcribed phonetically using those applications. After got the data of Tamil loanwords in phonetic form, I also transcribed the data of Hindi loanwords using different applications. The data from Hindi loanwords were transcribed using translation tools namely *Ashtangayoga*. First, Itranscribed the Roman script with diacritics into Devanagari form as it can be seen in the following figure.

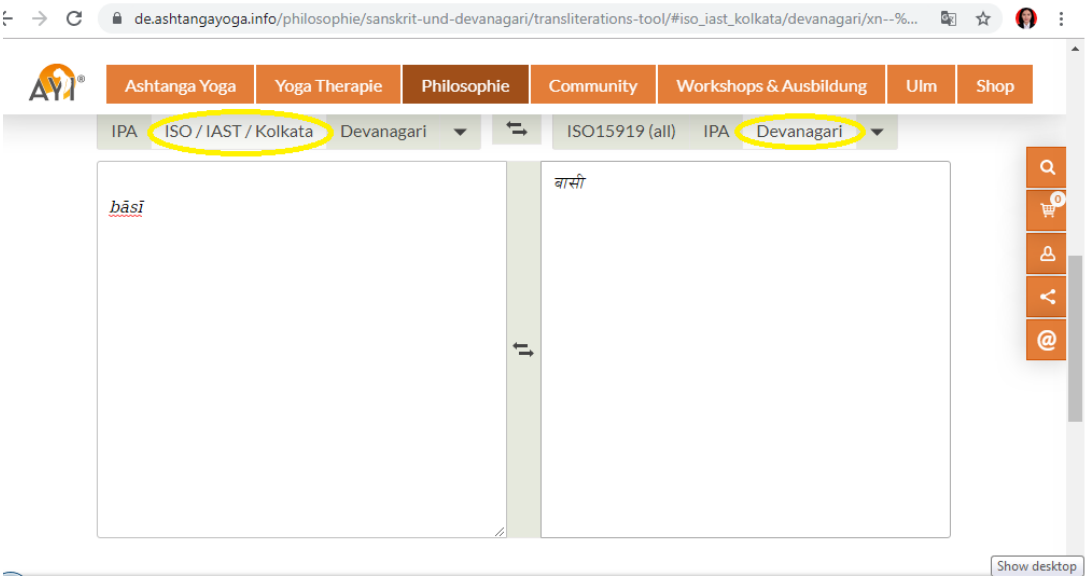

Figure 4 Roman script into Devanagari

The figure above showed the roman script from Hindi was changed into Devanagari. After I got the data in Devanagari form, I transcribed all the data phonetically one by one. The figure can be seen as follows:

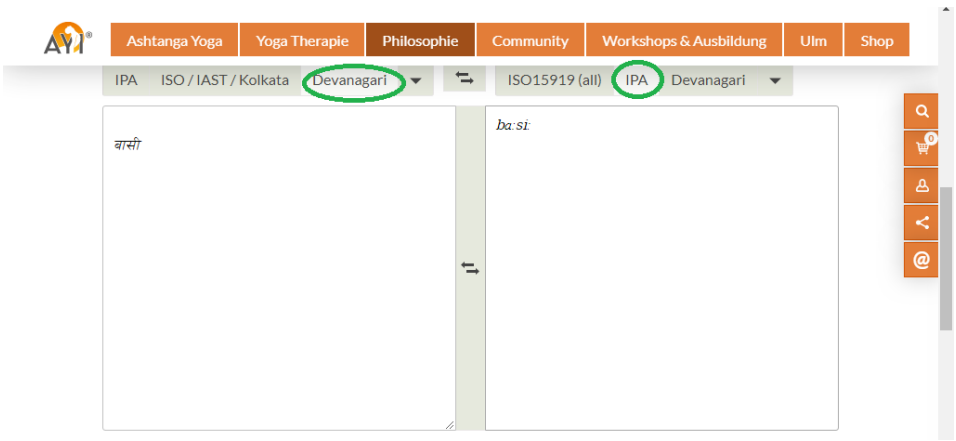

Figure 4 Devanagari into IPA transcription

The figure above showed that Devanagari forms of Hindi loanwords change into IPA transcription. After all of the data were transcribed phonetically, I grouped them based on the sounds change.

In analyzing the phonological process, we need to know how the words in Tamil and Hindi were pronounced. In this case, I also used the Google translation voiced to listen and to know how the words in Tamil and Hindi were pronounced.

3.4 Method of Data Analysis

In this study, I used *Agih* and *Padan* method by Sudaryanto (2015). The *Padan* method was used to analyze related to external factors such as language referential, phonetic articulator, translational, orthographic, and pragmatic, etc. Then, the *Agih* method was used to analyze language elements related to internal factors in a language such as adverb, clause, syllable, etc. Both methods were used in this study to reveal internal and external factors in the phonological process of loanwords. It is because these data were analyzed phonetically. It means that these data were connected to language-internal and external factors. The *Agih* method is applied by using deletion technique. It worked by omitting certain relevant lingual unity.

The following points are the procedures in analyzing the data.

1. Selecting the data

   All the transcribed data were selected to obtain data in the form of phonological process from Tamil into Indonesian Language and Hindi into Indonesian Language. The data that do not undergo the phonological processes are ignored.

2. Grouping the data

   The selected data would be grouped as follows:

Sound Change	***Data***
a:→a	[aʧɑ*:*ram]→[ac**a**ram]

The table above showed the sound change of sound [*a:*] into sound [a]. I grouped the data based on the sound change and gave bold mark to sign the sound change.

3. Analyzing the data

The data that have been selected and grouped are then analyzed using distinctive features.

3.5 Method of Data Presentation

To present the data, I used formal and informal methods. There are some signs and symbols used in the presentation of analysis. The symbols and signs are plus sign (+), less sign (-), arrows (→), parentheses (()), and brackets ([]). I used plus symbols (+) to indicate the presence features while minus symbol (-) to indicate absence features. Slash symbol (/) is used to indicate the environment. Hedge (#) is used to indicate the word boundary. Null symbol (Ø) is used to indicate the addition or deletion. The symbol ({}) is used to indicated that sound can appear in different position.

CHAPTER IV

FINDINGS AND DISCUSSIONS

This chapter consists of findings and discussions section. The findings contain phonological processes of Tamil and Hindi loanwords in Indonesian Language. The discussions section contains the factors influencing the phonological process of Tamil and Hindi loanwords in Indonesian Language and also the differences and similarities of phonological processes of Tamil and Hindi loanwords in Indonesian Language.

4.1Findings

In this section, I present the results of analysis as follows: (1) phonological processes of vowels in Tamil loanwords whichconsist of Vowel shortening, backing, weakening, lowering, and vowelization. (2) Phonological processes of consonants in Tamil loanwords consist of trilling, consonants strengthening, and alveolarization, gliding, de-affrication and consonants deletion. (3) Phonological processes of vowel in Hindi loanwords cover shortening process, weakening process, lowering process and de-nasalization of vowel. (4) Phonological processes of consonant in Hindi loanwords show: velarization, alveolarization, consonants deletion, gliding, de-affrication, de-aspiration, and epenthesis.The factors influencing the phonological processes will be discussed in discussion section. The explanation related to the results of the analysis can be seen below:

4.1.1 Phonological Processesofvowels in Tamil Loanwords

The phonological processes related to vowels in Tamil loanwords contain vowel shortening, backing, weakening, lowering, and vowelization. Those processes are explained as follows:

4.1.1.1 Vowel Shortening Process

The shortening process occurs when long vowels change into short vowels. In this case, I found the data from Tamil loanwords show that all long vowels become short vowels as follow:

Tamil		Indonesian	Meaning
[**ɑ:**ʧɑːɾʌm]	→	[**a**c**a**ram]	Wedding ring
[**i:**ɖɖʌm]	→	[**i**dam]	A pregnant woman craving
[an**e:**ka]	→	[an**e**ka]	Various
[çəɾpp**u:**]	→	[cərp**u**]	Sandals
[g**o:**ŋ**i:**]	→	[g**o**n**i**]	A sack

The table above shows long vowels such as [a:] changes into [a], [u:] change into [u], [i:] change into [i], [e:] change into [e] and [o] change into [o] at all position. The process of sound change can be described by making the phonological rule below:

$$\begin{bmatrix} +syl \\ -cons \\ +\boldsymbol{long} \end{bmatrix} \rightarrow \begin{bmatrix} +syl \\ -cons \\ -\boldsymbol{long} \end{bmatrix}$$

It can be seen from the rule above that vowels with features [+syl, -cons, +long] change into [+syl, -cons,-long]. In the borrowing process, the rule above

describes that long vowels from Tamil change into short vowel in Indonesian Language. This change occurs at all position. The factor influencing the process is the phonological system of Indonesian language does not have vowels with long feature. It can be concluded that all of long vowels coming from Tamil loanwords will change into short vowels.

4.1.1.2 Backing process

This process occurs when minus back vowels change into back vowels. In the borrowing process from Tamil into Indonesian Language I found the sound change of vowel [ʉ̟] into vowel [u]. The following data show theminus back vowel [ʉ̟] becomeback vowel [u]**.**

Tamil		Indonesian	Meaning
[gun̪d̪ʉ̟]	→	[gund**u**]	A marble
[ɑːʧʉ̟]	→	[ac**u**]	Mould
[çukkʉ̟]	→	[cuk**u**]	Dried Gambier root
[muṯṯʉ̟]	→	[mut**u**]	Pearl
[puʈʈʉ̟]	→	[put**u**]	Sweet rice cake
[ʋiːʧʉ̟]	→	[bic**u**]	Jack for rajsing weight
[ʋIl̪əŋgʉ̟]	→	[bələŋg**u**]	Obstacle

According to the data above, the process of sound changes of vowel [ʉ̟] into vowel [u] can be illustrated into this following rule.

[ʉ] → [u] / ____ #

$$\begin{bmatrix} +syl \\ -cons \\ +high \\ -\boldsymbol{back} \end{bmatrix} \rightarrow \begin{bmatrix} +syl \\ -cons \\ +high \\ +\boldsymbol{back} \end{bmatrix} \quad / \quad \#\begin{bmatrix} +cons \\ -syl \end{bmatrix}\_\_\$$

. The rule above describes that vowel with features [+syl,-cons, +high,-back] or sound [ʉ] changes into sound [u] with feature [+syl, -cons, +high, +back] at the final position of a word. The factors influencing the processes is Indonesian language does not have vowels sound [ʉ] thus it will bereplaced by vowels [u] at the final position

This rule is only applicable if vowel [ʉ] placed at the final position of a word. While, if vowel [ʉ] is placed in the medial position, it will change into sound [ə]. This process will be explained in weakening process.

4.1.1.3 Weakening process

The weakening process occurs when non central vowels change into central vowels. In this case, I found the sound change of vowel [I] into vowel [ə] and vowel [ʉ] into [u]. They are categorized into weakening process because this process makes front vowel changes into central vowel. This following data show the sound change of vowel [I] become vowel [ə] and [ʉ] changes into [ə].

Tamil		**Indonesian**	**Meaning**
[ʊ**I**l̩əŋgʉ]	→	[bələŋgu]	Obstacle
[**I**l̩aj]	→	[hələj]	Sheet
[kəɖ**ʉ**ləj]	→	[kədələj]	Soybean
[kəɹ**ʉ**ɖəj]	→	[kələdəj]	Donkey

As it can be seen from the data above, the phonological process of vowel [i] become vowel [ə] can be displayed as follows:

[I] →[ə] / #__

[I] → [ə] /#[C] __ $

$$\begin{bmatrix} +syl \\ -cons \\ +\boldsymbol{front} \\ -back \\ -tense \end{bmatrix} \rightarrow \begin{bmatrix} +syl \\ -cons \\ -\boldsymbol{front} \\ -back \\ -tense \end{bmatrix} / \left\{ \begin{matrix} \underline{\quad\quad\quad} \\ \begin{bmatrix} +cons \\ -syl \end{bmatrix} \underline{\quad} \begin{bmatrix} +cons \\ -syl \end{bmatrix} \$ \end{matrix} \right\}$$

The rule above states that vowel [I] becomes vowel [ə] at the initial of a word or at the first syllable of a word after consonants. It can be seen from the rule that vowel [I] has features [+syl, -cons, +front,-back,-tense] while vowel [ə] has features [+syl, -cons,-front,-back,-tense]. This process makes the front vowel became central vowel or minus front vowel. This rule can be applied if the position of vowel [I] is in the open syllable. Moreover, if it appears in the close syllable, vowel [I] does not change into vowel [ə] as it can be seen in the following data.

Tamil		**Indonesian**	**Meaning**
[ʊaʈɪl]	→	[batIl]	Copper bowl, tray
[ʊəɖɪl]	→	[bədIl]	Gun , rifle
[k*a:*ʈɪl]	→	[katIl]	Bedstead
[maɳIk]	→	[manIk]	Beads

The data above shows that vowel [I] in the close syllable does not change into sound [ə] but it remains a vowel [I]. It happens because vowel [I] in Indonesian Language only placed at the close syllable as in a word [ambIl], [batIk], and [apIk].

The data above also show the sound change of vowel [ʉ] become vowel [ə] at the medial position. This process can be formulated into this following rule.

$$\begin{bmatrix} +syl \\ -cons \\ +high \\ -back \\ +\boldsymbol{round} \end{bmatrix} \rightarrow \begin{bmatrix} +syl \\ -cons \\ -high \\ -back \\ -\boldsymbol{round} \end{bmatrix} / \$\begin{bmatrix} +cons \\ -syl \end{bmatrix} \_\_ \begin{bmatrix} +cons \\ -syl \end{bmatrix}\$$

The rule above describe that vowel [ʉ] with features [+syl,-cons,+high,-back, +round] changes into vowel [ə] with features [+syl,-cons,+high,-back,+round] in the medial position between consonants. This rule can be applied if vowel [ʉ] appears at the second syllable in a word which has three syllables. It can be said that this change only occurs when vowel [ʉ] appears in the medial of syllable. But, if this sound appears in the initial or final position, it will change into vowel [u] as I have been explained in the backing process above.

4.1.1.4 Lowering process

The data of Tamil loanwords show the sound change of vowel [ʌ] becomes vowel [a]. This process is categorized into lowering process. In the following table, I displayed the data that show minus low vowel [ʌ] changes into low vowel [a].

Tamil		**Indonesian**	**Meaning**
[app**ʌ**m]	→	[ap**a**m]	Kind of rice cake

[ʊɑːɭ**ʌ**m]	→	[bal**a**m]	To paddle with short strokes
[ʊajIɾ**ʌ**m]	→	[bIr**a**m]	Red
[lɑːɖ**ʌ**m]	→	[lad**a**m]	Horse shoes
[mɑːnIkk**ʌ**m]	→	[manIk**a**m]	Gem, jewel
[pɑːʈʈIɾ**ʌ**m]	→	[patIr**a**m]	dagger

It can be seen from the data that lowering process happens when vowel [Λ] with minus low feature changes into vowel [a] with plus low feature. According to the data above, I made phonological rule as follows:

[Λ]→ [a] / $__[m]#

$$\begin{bmatrix} +syl \\ -cons \\ -\boldsymbol{low} \\ +back \end{bmatrix} \longrightarrow \quad \begin{bmatrix} +syl \\ -cons \\ +\boldsymbol{low} \\ -back \end{bmatrix} / \$\_\_\_ \begin{bmatrix} +cons \\ +nas \\ -cor \\ -ant \\ -cont \\ +voiced \end{bmatrix} \#$$

The rule above explains that vowel [Λ] with minus low feature will change into vowel [a] with plus low feature at the final syllable after consonant nasal [m]. Indonesian language does not have vowel [Λ] in its phonological system, this process could happen because in borrowing process vowel [Λ] is replaced by vowel [a] at the final syllable only if it is followed by nasal consonants [m].

4.1.1.5 Vowelization

Vowelization happen when diphthong sound changed into vowels. In this case, I found some data related to this process. The data can be seen in the following table.

Tamil		**Indonesian**	**Meaning**
[konɖ**aj**]	→	[konde]	Hairbun
[onɖ**aj**]	→	[onde]	Kind sweet of meat

The table above shows the sound change of diphthongs into monophthong. In Tamil loanwords, the diphthong sound which changes into monophthong is sound [ai]. That sound changed into monophthong [e] during borrowing process in Indonesian Language. The following rule is made to give the illustration of how the process of sound changes of diphthong into monophthong.

[aj] → [e] /[o][C][C] ___#

$$\begin{bmatrix} +syl \\ -cons \\ -high \\ +low \end{bmatrix}\begin{bmatrix} +syl \\ -cons \\ +high \\ -low \end{bmatrix} \longrightarrow \begin{bmatrix} +\boldsymbol{syl} \\ -\boldsymbol{cons} \\ -\boldsymbol{high} \\ -\boldsymbol{low} \end{bmatrix} / \begin{bmatrix} +syl \\ -cons \\ -high \\ +round \end{bmatrix}\begin{bmatrix} +cons \\ -syl \end{bmatrix}\begin{bmatrix} +cons \\ -syl \end{bmatrix}\_\_\_\#$$

The rule above explains that diphthong [aj] will change into vowel [e] at the final position of a word if there is vowel [o] and consonants before the diphthong [aj]. For the information, the change of diphthong [aj] into vowel [e] only occurs when there is vowel [o] at the first syllable. But, it remains [aj] when there are vowels other than [o] as it can be seen in the following data.

Tamil		Indonesian	Meaning
[ləbb**aj**]	→	[ləb**aj**]	Mosque
[mɑ:l**aj**]	→	[mal**aj**]	String, garland

[mɑːliːg**aj**]	→	[malig**aj**]	Palace
[kuɻ**aj**]	→	[kul**aj**]	Drooping
[kəɖ**aj**]	→	[kəd**aj**]	Small shop
[çɑːɳ**aj**]	→	[can**aj**]	Grindstone
[anɖ**aj**]	→	[and**aj**]	Possibility

The data above shows that diphthong [aj] does not change into vowel [e] when there is no vowel [o] before the diphthong sound. The changing of diphthong into vowel in Indonesian language is aimed to make the pronunciation easier. There is no previous study that able to explain why this process could happen.

4.1.2 Phonological processes of consonants in Tamil loanword

The phonological processes of consonants in Tamil loanwords consist of trilling, consonants strengthening, and alveolarization, gliding, deaffrication and consonants deletion. The explanations related to those processes are explained below.

4.1.2.1 Trilling

Pandey (2013) mentioned that co-articulatory process includes processes that change in the place of articulation. The sound change of tap sound into trill sound is categorized into trilling process. In this case, I found the data show that tap consonant becomes trill consonant. The data can be seen in the following table:

Tamil		**Indonesian**	**Meaning**
[ʈ̪iːɾaj]	→	[ti**r**aj]	Curtain
[ʋajI**ɾ**ʌm]	→	[bI**r**am]	Red
[ʋə**ɾ**ɑːmmɑːɳi]	→	[bə**r**amani]	Coral beads

[aʧɑ:**ɾ**ɑ:]	→	[aca**r**a]	Program / agenda
[gu**ɾ**Inḏʌm]	→	[gu**r**Indam]	Aphorism in two lines

The list of data above shows the sound change of consonant tap sound [ɾ] into consonant sound trill [r]. The sound change occurs at all position. This process can be displayed into this following rule

[ɾ] → [r] / elsewhere

$$\begin{bmatrix} +cons \\ -syl \\ +son \\ \boldsymbol{-cont} \\ -lat \\ -nas \end{bmatrix} \rightarrow \begin{bmatrix} +cons \\ -syl \\ +son \\ \boldsymbol{+cont} \\ -lat \\ -nas \end{bmatrix}$$

The rule above shows that consonant tap [ɾ] becomes consonant trill [r] at all position. It can be seen from the rule that consonant tap [ɾ] has features [+cons,-syl,+son,-cont,-lat,-nas] while consonant trill sound has feature [+cons,-syl,+son, +cont,-lat,-nas]. This process makes one of the features of the sound has transformed from minus continuant into plus continuant.

4.1.2.2 Consonants strengthening

In Tamil loanwords, I found strengthening process of consonant sound. This process shows that approximant sound [ʋ] changes into plosive sound [b]. The data can be seen as follow:

Tamil		**Indonesian**	**Meaning**
[**ʋ**ɑ:ḻʌm]	→	[**b**alam]	To paddle with

			short strokes
[**ʋ**ɑːnʧiː]	→	[**b**anci]	Adze
[**ʋ**aɳi]	→	[**b**ani]	Descendant
[**ʋ**aʈɪl]	→	[**b**atIl]	Copper bowl, tray
[**ʋ**əɖIl]	→	[**b**ədIl]	Gun , rifle
[**ʋ**ənnɑːn]	→	[**b**ənan]	Laundryman
[**ʋ**ajIrʌm]	→	[**b**Iram]	Red

It can be seen from the table above that semivowel [ʋ] changes into consonant [b]. The illustration of the sound change process can be seen in the following rule:

[ʋ] → [b] /#___[V]$

$$\begin{bmatrix} +\boldsymbol{son} \\ -\boldsymbol{ant} \\ -cor \\ +\boldsymbol{cont} \\ +voiced \end{bmatrix} \rightarrow \begin{bmatrix} -\boldsymbol{son} \\ +\boldsymbol{ant} \\ -cor \\ -\boldsymbol{cont} \\ +voiced \end{bmatrix} \; /\_{\#\_\_\_} \begin{bmatrix} +syl \\ -cons \end{bmatrix} \$$$

The rule above explains that semivowel [ʋ] will change into consonant [b] at first syllable of a word before vowels. This process categorized into strengthening because consonant sound [b] is stronger that semivowel. It can be seen from the rule that there are some changes from plus sonorant sound into minus sonorant sound, minus consonantal into plus consonantal and minus anterior into plus anterior. However, this rule can be applied if sound [ʋ] is placed at the initial of a word, but when it is placed in the final syllable, it will change into semivowel [w]. This change will explain in gliding process.

4.1.2.3 Alveolarization

Alveolarization is a process when a non-alveolar sound transformed into alveolar sound. In the borrowing process of Tamil into Indonesian Language, I found Alveolarization process as follows:

1. Retroflex lateral sound [ɭ] changes into alveolar lateral [l]

In Alveolarization process, I found the sound change of consonant sound [ɭ] into consonant sound [l] coming from Tamil loanwords. The data can be seen in the table as follows:

Tamil		**Indonesian**	**Meaning**
[ɲo:**ɭ**i:]	→	[ɲo**l**i]	Chajr litter , sedan
[kaʈə**ɭ**um]	→	[katə**l**um]	Bastion
[ku**ɭ**aj]	→	[ku**l**aj]	Drooping
[ku:**ɭ**i:]	→	[ku**l**i]	Pajd labourer
[mɑ:**ɭ**ɑj]	→	[ma**l**aj]	String, garland
[mɑ:ɾapu:**ɭ**aj]	→	[marapu**l**aj]	Bridegroom

The table above shows the sound change of lateral sound [ɭ] into sound [l]. The sound change process of consonant [**ɭ**] into consonant [l] can be illustrated into this following rule .

[ɭ]→ [l] / $[v]__[v]#

$$\begin{bmatrix} +cons \\ +lat \\ +\boldsymbol{ant} \\ +cor \\ -cont \end{bmatrix} \rightarrow \begin{bmatrix} +cons \\ +lat \\ -\boldsymbol{ant} \\ +cor \\ -cont \end{bmatrix} \quad / \ \$\begin{bmatrix} +syl \\ -cons \end{bmatrix} \_\_ \begin{bmatrix} +syl \\ -cons \end{bmatrix} \#$$

The rule above show that lateral sound [l̪] has features [+cons, +lat, +ant, +cor,- cont] whereas sound [l] has features [+cons,+lat,-ant, +cor,-cont]. It explains that consonant sound [l̪] will change into consonant sound [l] at the final syllable of a word between vowels.

2. Nasal retroflex sound [ɳ] changes into nasal alveolar [n]

In loanwords of Tamil, the writer also found the changing of nasal consonant sounds into another nasal sound in different position. The sample of data has provided as follow:

Tamil		**Indonesian**	**Meaning**
[ma**ɳ**Ik]	→	[ma**n**Ik]	Beads
[go:**ɳ**i:]	→	[go**n**i]	A sack
[ɕɑ:**ɳ**aj]	→	[ca**n**aj]	Grindstone
[ʊa**ɳ**i]	→	[ba**n**i]	Descendant

The data above show that the nasal consonant sound [ɳ] changed into nasal consonant [n] at the final syllable of word. The process of sound change of consonant [ɳ] becomes consonant [n] can be illustrated into the following rule.

[ɳ] → [n] / $__[+syl,+son]#

$$\begin{bmatrix} +cons \\ +nas \\ -\boldsymbol{ant} \\ +cor \\ -cont \end{bmatrix} \rightarrow \begin{bmatrix} +cons \\ +nas \\ +\boldsymbol{ant} \\ +cor \\ -cont \end{bmatrix} \; / \$\_\_\_ \begin{bmatrix} +syl \\ -cons \\ +son \end{bmatrix} \#$$

The rule above shows that the nasal sound [ɳ] will change into consonant nasal [n] at the final syllable of a word before vowels or sonorant sounds. It can be seen from the rule that sound [ɳ] has features [+cons, +nas,-ant, +cor,-cont] while consonant sound [n] has features [+cons, +nas, +ant, +cor, -cont]. This process causes minus anterior feature changes into plus anterior feature.

3. **Approximant consonant [ɻ] changes into [l]**

The sound changes of approximant consonant [ɻ] becomes lateral consonant [l] found in the following data.

Tamil		**Indonesian**	**Meaning**
[kəɻuɖəj]	→	[kə**l**ədəj]	Donkey

The data above shows that consonant [ɻ] changes into consonant [l]. The process of sound change can be formulated into this following rule.

[ɻ]→ [l] / $[v]__[v]$

$$\begin{bmatrix} +cons \\ -\boldsymbol{lat} \\ -\boldsymbol{ant} \\ +cor \\ +cont \end{bmatrix} \rightarrow \begin{bmatrix} +cons \\ +\boldsymbol{lat} \\ +\boldsymbol{ant} \\ +cor \\ +cont \end{bmatrix} / \$ \begin{bmatrix} +\boldsymbol{syl} \\ -\boldsymbol{cons} \end{bmatrix} \_\_\_\_\_ \begin{bmatrix} +\boldsymbol{syl} \\ -\boldsymbol{cons} \end{bmatrix} \$$$

The rule above describes the sound change of approximant [ɻ] into lateral [l]. It explains that approximant [ɻ] will changes into lateral sound [l] in the second syllable of a word between vowels. It happens because Indonesian Language does not have approximant [ɻ].

4. Dentalized alveolar [d̪] changes into alveolar [d]

This process show the sound change of dental alveolar consonants become alveolar consonants. The data related to this process can be seen below:

Tamil		**Indonesian**	**Meaning**
[mo̪**d̪**al]	→	[mo**d**al]	Working capital
[pɑ:n**d̪**u:]	→	[pan**d**u]	Guide
[t̪ɑ:n**d̪**u:]	→	[tan**d**u]	Litter, sedan chair
[gu:ɾInd̪ʌm]	→	[gurIn**d**am]	Aphorism in two lines

The data above show that dental consonant alveolar changes into alveolar at al position. This process can be illustrated into this following rule.

$$\begin{bmatrix} +cons \\ -syl \\ +cor \\ +ant \\ +\boldsymbol{dist} \\ \alpha voiced \end{bmatrix} \rightarrow \begin{bmatrix} +cons \\ -syl \\ +cor \\ +ant \\ -\boldsymbol{dist} \\ \alpha voiced \end{bmatrix}$$

The rule above states that alveolar consonants with plus distribution becomes minus distribution at all position. This process occurs because phonological system of Indonesian Language does not have distributive consonant.

5. Dentalized alveolar [t̪] changes into [t]

The sound changes of dentalized consonants not only happen to consonant [d̪] but also consonant [t̪]. The following data show the sound change of dentalized alveolar [t̪] into t].

Tamil		**Indonesian**	**Meaning**
[t̪a‌ɭɑ:m]	→	[**t**alam]	Plate, tray
[t̪anɳl̪]	→	[**t**andIl]	Overseer, foreman
[t̪o:‌ɭan]	→	[**t**olan]	Friend
[pi:t̪t̪ɑ:m]	→	[pi**t**am]	dizziness

By looking at the list of data above, the phonological rule to show the process of sound change can be created as follow:

[t̪] →[t] /#___

$$\begin{bmatrix} +cons \\ -syl \\ +ant \\ +cor \\ +\boldsymbol{dist} \\ -voiced \end{bmatrix} \longrightarrow \begin{bmatrix} +cons \\ -syl \\ +ant \\ +cor \\ -\boldsymbol{dist} \\ -voiced \end{bmatrix}$$

The rule above explains that consonant [t] with dentalized changes into consonant [t] at the initial of a word. This process makes the changing of plus distributed consonant become minus distributed consonant. As for information that Indonesian Language does not have consonant with plus distributed, it makes sense when the consonant [t̪] will be replaced by consonant [t] during the process of borrowing.

6. Retroflex [ʈ] changes into [t]

In Alveolarization process, I also found the consonant change of [ʈ] into [t]. The data are displayed below:

Tamil		**Indonesian**	**Meaning**
[pa**ʈʈ**am]	→	[pa**t**am]	Bridal frontlet
[pu**ʈʈ**ʉ]	→	[pu**t**u]	Sweet rice cake
[ʋa**ʈʈ**Il̪]	→	[ba**t**Il]	Copper bowl, tray
[çəmmə**ʈ**i]	→	[cəmə**t**i]	Whip

Based on the data above, the phonological rule can be created as follows:

[ʈ] → [t] / $__[v]#

$$\begin{bmatrix} +cons \\ -son \\ -\boldsymbol{ant} \\ -cor \\ -cont \\ -voiced \end{bmatrix} \rightarrow \begin{bmatrix} +cons \\ -son \\ +\boldsymbol{ant} \\ -cor \\ -cont \\ -voiced \end{bmatrix} / \$\_\_\_\begin{bmatrix} +syl \\ -cons \end{bmatrix}\#$$

The rule above states that consonant sound [ʈ] changes into consonants [t] at the final syllable of a word and it is followed by vowels. This change only appears at the syllable because the distribution of this sound only places medial position in Tamil. It also can be seen from the rule that consonant sound [ʈ] has features [+cons,-son, +ant, -cor, -cont,-voiced] while consonant sound [t] has features [+cons, -son,-ant, -cor, -cont,-voiced]. This process made pus anterior feature from sound [ʈ] changed into minus anterior in sound [t].

7. Retroflex [ɖ] changes into [d]

Tamil has many retroflex sounds. In this case, I found another sound change of non-alveolar becomes alveolar. the data is displayed as follows:

Tamil		**Indonesian**	**Meaning**
[ʋeːɖɑː]	→	[we**d**a]	The Vedic book
[aɳɖʌm]	→	[an**d**am]	Trim one's hajr neatly
[çəɖəlˌiːŋgɑːm]	→	[sə**d**əliŋgʌm]	Red lead
[pɑːnɖʌm]	→	[pan**d**am]	Resin

The data above shows the sound change of consonants [ɖ] becomes sound [d] at the second syllable or final syllable of a word. The phonological rule to describe this process can be illustrated as follows:

[ɖ]→ [d] /$___[v]# or $__[v]$

$$\begin{bmatrix} +cons \\ -son \\ -\boldsymbol{ant} \\ +cor \\ -cont \\ +voiced \end{bmatrix} \longrightarrow \begin{bmatrix} +cons \\ -son \\ +\boldsymbol{ant} \\ +cor \\ -cont \\ +voiced \end{bmatrix} / \begin{Bmatrix} \$\_\_\_[+syl] \\ \$\_\_\_\_[+syl]\$ \end{Bmatrix}$$

The rule above states that consonant [ɖ] changes into consonant [d] at the final syllable of a word before vowels or at the second syllable of a word before vowel. Through this process, there is an anterior feature change into minus anterior feature.

4.1.2.4 Stopping Process

Some data of Tamil loanwords show phonological process of consonant [ç] into consonant [c]. For an illustration, I present the data into the following table.

Tamil		**Indonesian**	**Meaning**
[**ç**ɑːɳaj]	→	[**c**anaj]	Grindstone
[**ç**əmməʈi]	→	[**c**əməti]	Whip
[**ç**ərppuː]	→	[**c**ərpu]	Sandals
[**ç**ukaj]	→	[**c**ukaj]	Custom duty
[**ç**ukk~~ʉ~~]	→	[**c**uku]	Dried Gambier root

The table above shows the data taken from Tamil loanwords undergo the phonological processes from sound [ç] become sound [c]. The process can be illustrated into this following rule:

[ç] → [c] / #___

$$\begin{bmatrix} +cons \\ -syl \\ +cor \\ -ant \\ +\boldsymbol{cont} \\ -voiced \end{bmatrix} \rightarrow \begin{bmatrix} +cons \\ -syl \\ +cor \\ -ant \\ -\boldsymbol{cont} \\ -voiced \end{bmatrix} / \#\_\_\_\_$$

The rule above show that consonant [ç] with features [+cons,-syl,+cor,-ant,+cont,-voiced] changes into consonant [c] with features [+cons,-syl,+cor,-ant,-cont,-voiced] at the initial of a word. This change only occurs because this consonant does not belong to consonant in Indonesian Language, so this sound will be replaced by consonant [c] at the initial position.

4.1.2.5 De-affrication

This process occurs when affricates consonants change into non affricate consonants. The data related to this process can be seen below.

Tamil		**Indonesian**	**Meaning**
[a**ʧ**a:ra:m]	→	[a**c**aram]	Wedding ring
[a:**ʧ**u]	→	[a**c**u]	Mould
[vɑ:n**ʧ**i:]	→	[ban**c**i]	Adze

According to the data above, the phonological rule related to the process of sound change can be illustrated as follows:

[ʧ] → [c] / [v]__[v] or $___[v]#

$$\begin{bmatrix} -syl \\ +cons \\ -ant \\ +cor \\ +\boldsymbol{del.rel} \end{bmatrix} \rightarrow \begin{bmatrix} -syl \\ +cons \\ -ant \\ +cor \\ -\boldsymbol{del.rel} \end{bmatrix} / \left\{ \begin{matrix} \begin{bmatrix} +\boldsymbol{syl} \\ -\boldsymbol{cons} \end{bmatrix} \_\_ \begin{bmatrix} +\boldsymbol{syl} \\ -\boldsymbol{cons} \end{bmatrix} \\ \$ \_\_\_\_ \begin{bmatrix} +\boldsymbol{syl} \\ -\boldsymbol{cons} \end{bmatrix} \end{matrix} \right\}$$

The rule above states that affricate sound [ʧ] with plus delayed release feature change into plosive sound [c] with minus delayed feature between vowels or at the final syllable of a word before vowels.

4.1.2.6 Gliding

Gliding process found in the sound change of approximant sound [ʋ] into glide sound [w]. The data related to gliding process can be seen as follow:

Tamil		Indonesian	Meaning
[kɑːʋɑːl]	→	[ka**w**al]	Guard
[pɑːʋaj]	→	[pa**w**aj]	parade
[ʋeːɖɑː]	→	[**w**eda]	The Vedic book

The data above shows the sound change of sound [ʋ] into sound [w]. The following rule shows how the process of sound changes of sound [ʋ] into sound [w].

[ʋ] → [w] / $___[V]# or [ʋ] → [w] / #___[e]

$$\begin{bmatrix} -syl \\ -cons \\ +son \\ -\boldsymbol{high} \\ -\boldsymbol{round} \end{bmatrix} \rightarrow \begin{bmatrix} -syl \\ -cons \\ +son \\ +\boldsymbol{high} \\ +\boldsymbol{round} \end{bmatrix} / \left\{ \begin{array}{l} \$\_\_\_\_\_ \begin{bmatrix} +syl \\ -cons \end{bmatrix} \\ \\ \_\_\_\_\_ \begin{bmatrix} +syl \\ -high \\ -low \\ +long \end{bmatrix} \end{array} \right\}$$

The phonological rule above shows that semivowel [ʋ] has features [-syl,-cons, +son,-round] while sound [w] has features [-syl, -cons, +son ,+round]. It explains that semivowel [ʋ] will change into sound [w] at the final syllable of a word after vowels or at the initial position and followed by vowel [e:]. In this

process occurs some features changing from rounded into unrounded and minus high into plus high.

4.1.2.7 Consonants deletion

Consonants deletion happens when one of the consonants of a word is eliminated or deleted. The data related to consonants deletion can be seen in the following table.

Tamil		**Indonesian**	**Meaning**
[ka**pp**al]	→	[ka**p**al]	Ship
[lə**bb**aj]	→	[lə**b**aj]	Mosque
[çu**mm**aː]	→	[cu**m**a]	Only
[mɑːnI**kk**ʌm]	→	[manI**k**am]	Gem, jewel

The data above shows the consonants deletion in loanwords from Tamil. It can be seen from the table that one of the sounds in a word got eliminated. The process consonants deletion can be illustrated into phonological rule as follows:

$$\begin{bmatrix} -syl \\ +cons \\ \propto son \\ \beta cor \\ \gamma ant \end{bmatrix}\begin{bmatrix} -syl \\ +cons \\ \propto son \\ \beta cor \\ \gamma ant \end{bmatrix} \rightarrow \begin{bmatrix} -syl \\ +cons \\ \propto son \\ \beta cor \\ \gamma ant \end{bmatrix}$$

The rule above states that two consonants with same features in the sequential position will be eliminated. The factor influencing this process is in the structure of a word in Indonesian Language there is no repletion of consonants with similar features. According to this differences, those consonants will be eliminated during the process of borrowing in Indonesian Language.

4.1.3 Phonological processes of vowels in Hindi loanwords

In the phonological processes of Hindi loanwords in Indonesian Language, I found shortening process, weakening process, lowering process and de-nasalization of vowel.

4.1.3.1 Vowel shortening

In the process of borrowing from Hindi into Indonesian Language, I found the data that undergo the shortening process**.** The following data show the sound change of long vowels into short vowels.

Hindi		**Indonesian**	**Meaning**
[**ɑ:**j**ɑ:**h]	→	[**a**j**a**h]	father
[b**ɑ**:ɳɖ**o:**]	→	[b**a**nd**o**]	Kerchief/bandana
[b**ɑ**:s**i:**]	→	[b**a**s**i**]	Stale
[ʧaɳd**u:**]	→	[cand**u**]	Prepared opium
[ɖʰ**o:**b**i:**]	→	[d**o**b**i**]	laundryman

The table above shows the sound change of long vowels into short vowels. The process of vowel shortening can be described into phonological rule as follows:

$$\begin{bmatrix} +syl \\ -cons \\ +\boldsymbol{long} \end{bmatrix} \rightarrow \begin{bmatrix} +syl \\ -cons \\ -\boldsymbol{long} \end{bmatrix}$$

The rule above explains that long vowels with features [+syl,-cons, +long] will change into short vowels with features [+syl,-cons,-long] at all position. This process occurs because in phonological system of Indonesian Language there are no vowels with long feature.

4.1.3.2 Weakening Process

In the data of Hindi loanwords, I found the weakening process. It shows the sound change of vowel [ɛ] becomes vowel [ə]. The data can be seen below:

Hindi		Indonesian	Meaning
[ʧɛmki:]	→	[cəməki]	*spangle*
[ʊɛlɑjti:]	→	[bəlati]	*dagger*
[kɛɽɑ:ni:]	→	[kərani]	*Clerk*

It can be seen from the data above that weakening process occur when non central vowel [ɛ] changes into central vowel [ə]. The phonological rule related to this process can be illustrated as follows:

[ɛ] → [ə] → #[C]___$

$$\begin{bmatrix} +syl \\ -cons \\ -high \\ -low \\ +\boldsymbol{front} \end{bmatrix} \rightarrow \begin{bmatrix} +syl \\ -cons \\ -high \\ -Low \\ -\boldsymbol{front} \end{bmatrix} / \#\begin{bmatrix} +cons \\ -syl \end{bmatrix} \_\_\_\$$

The phonological rule above shows that vowel [ɛ] will change into vowel [ə] at the first syllable of a word after consonants in open syllable. It can be seen from the rule that vowel [ɛ] has features [+syl, -cons,-high,-low,+front] while vowel [ə] has feature [+syl,-cons,-high,-low,-front]. This process is categorized into weakening because the front vowels change into central vowels.

4.1.3.3 Lowering process

The lowering process in loanwords of Hindi occurs when vowel [ɔ] changes into vowel [a]. The data related to this process is displayed below:

Hindi		Indonesian	Meaning
[gɔpuɽa]	→	[g**a**pura]	*gate*

The data above shows that vowel [ɔ] changes into vowel [a]. This process can be formulated into this following rule.

[ɔ] →[a] /#[C]__$

$$\begin{bmatrix} +syl \\ -cons \\ -high \\ -\boldsymbol{low} \end{bmatrix} \rightarrow \begin{bmatrix} +syl \\ -cons \\ -high \\ +\boldsymbol{low} \end{bmatrix} / \#\begin{bmatrix} +\boldsymbol{cons} \\ -\boldsymbol{syl} \end{bmatrix}\_\_\$$

The rule above states that vowel [ɔ] with [-low] feature changes into vowel [a] with [+low] feature at the first syllable of a word before consonants. This rule can be applied if vowel [ɔ] is placed in open syllable, but when it is in close syllable it does not undergo sound change.

4.1.3.4 De-nasalization of vowel

The phonological system of Hindi contains nasalized vowel. In this process, I found the data from Hindi loanwords show that nasalized vowel changes into non nasal vowel. The data can be seen in the following table.

Hindi		**Indonesian**	**Meaning**
[b**ẽ**ʈɑ:]	→	[b**e**ta]	*I*
[b**ẽ**ʈi:]	→	[b**e**ti]	*real evidence of someone fɔlt*

The data above show that nasalized vowel [ẽ] becomes vowel [e]. This process can be formulated into phonological rules as follows:

[ẽ]→ [e] / #[b]__[ʈ]

$$\begin{bmatrix} +syl \\ -cons \\ -high \\ -low \\ +\boldsymbol{dist} \end{bmatrix} \rightarrow \begin{bmatrix} +syl \\ -cons \\ -high \\ -low \\ -\boldsymbol{dist} \end{bmatrix} / \begin{bmatrix} +cons \\ -syl \\ -cont \\ -ant \\ +voiced \end{bmatrix} \_\_\_\_\_ \begin{bmatrix} +cons \\ -syl \\ -cont \\ -ant \\ -voiced \end{bmatrix}$$

The rule above state that nasalized vowel [ẽ] changes into non nasal at the first syllable between plosive consonant [b] and retroflex consonant [ʈ].

4.1.4 Phonological processes of consonants in Hindi loanwords

The results of analysis show that phonological process of Hindi loanwords into Indonesian Language consists of velarization, alveolarization, consonants deletion, gliding, de-affrication, deaspiration, and epenthesis. Those processes are explained below:

4.1.4.1 Velarization of nasal sound

The Velarization processes of nasal sound in Hindi loanwords occur when nasal sound [m] changes into nasal sound [ŋ].The following data presents the sound change of sound [m] into sound [ŋ].

Hindi		Indonesian	Meaning
[bʰ a**m**sɑ:l]	→	[ba**ŋ**sal]	shed
[bɑ:**m**si:]	→	[ba**ŋ**si]	flute

The phonological rule to show the process of sound change of sound [m] into sound [ŋ] can be described as follows:

[m] →[ŋ] / ___[s]

$$\begin{bmatrix} +cons \\ +nas \\ +\boldsymbol{ant} \\ -cor \end{bmatrix} \rightarrow \begin{bmatrix} +cons \\ +nas \\ -\boldsymbol{ant} \\ -cor \end{bmatrix} / \_\_ \begin{bmatrix} +cons \\ -syl \\ +ant \\ +cor \\ +strid \end{bmatrix}$$

The rule above states that consonants [m] changes into sound [ŋ] if it is followed by consonants [s]. This change occurs when nasal sound [m] as a coda and followed by fricative sound [s]. Coda can be said as part of syllable that follows the nucleus or vowels.

4.1.4.2 Alveolarization

1. Sound [m], and [ɳ] changes into sound [n]

In Hindi loanwords, I found the sound change non alveolar nasal sound into alveolar nasal sound. This process happens to nasal sound [m] and [ɳ] which changes into alveolar nasal [n]. The data are displayed below:

Hindi		Indonesian	Meaning
[gɑː**mɻ**ɑː]	→	[ga**n**ɻa]	*Indian himp*
[bɑː**ɳ**doː]	→	[ba**n**do]	*Kerchief/bandana*
[ʧa**ɳ**duː]	→	[ca**n**du]	*Prepared opium*
[ɑːbemɑː**ɳ**ɑː]	→	[abema**n**a]	*(anal or urethral orifices)*

It can be seen from the data above that nasal sound [m] into [n] at the first syllable of a word. Then, nasal sound [ɳ] changes into sound [n] at the first syllable or at the final syllable of a word. The sound change process can be described into phonological rule as follow.

1. [m] → [n] /__[ɟ]

$$\begin{bmatrix} +cons \\ +nas \\ +ant \\ -\boldsymbol{cor} \end{bmatrix} \rightarrow \begin{bmatrix} +cons \\ +nas \\ +ant \\ +\boldsymbol{cor} \end{bmatrix} / \$\_\_ \begin{bmatrix} +cons \\ -syl \\ -ant \\ -cor \\ +voiced \end{bmatrix}$$

The rule above shows that nasal sound [m] changes into nasal sound [n] when the position of consonant [m] is as a coda and followed by consonants [ɟ].

2. [ɳ]→ [n] / #[V]__$ or $___[V]#

$$\begin{bmatrix} +cons \\ +nas \\ -\boldsymbol{ant} \\ +cor \end{bmatrix} \rightarrow \begin{bmatrix} +cons \\ +nas \\ +\boldsymbol{ant} \\ +cor \end{bmatrix} / \left\{ \begin{matrix} \begin{bmatrix} +syl \\ -cons \end{bmatrix} \_\_\_\_ \$ \\ \$ \_\_\_\_\_ \begin{bmatrix} +syl \\ -cons \end{bmatrix} \end{matrix} \right\}$$

The rule above presents how the process of nasal sound [ɳ] becomes nasal sound [n] at the first syllable of a word or at the final syllable of a word. The rule shows that nasal sound [ɳ] has [-ant, +cor] feature while nasal sound [n] has [+ant, +cor] feature. The process of sound changes made minus anterior of sound [ɳ] changed into plus anterior in sound [n].

2. Sound [ɖ] changes into sound [d]

In the data, I also found sound change of consonant [ɖ] becomes consonant [d]. The data related to this process can be seen as follow:

Hindi		Indonesian	Meaning
[**ɖ**andi:]	→	[dandi]	*kettledrum*
[**ɖ**ɑ:rci:ni:]	→	[darcini]	*cinnamon*
[**ɖ**e:ʊɑ:na]	→	[dewana]	*mad*

[**ɖ**ɛrita]	→	[dərita]	*suffer*
[**ɖ**^{h}o:bi:]	→	[dobi]	*lɔndryman*
[**ɖ**e:ʊ*a*ːn]	→	[dewan]	*council*

The data above show the sound change of consonant [ɖ] becomes consonant [d]. The process of sound change can be formulated as follow:

[ɖ]→ [d] /#___

$$\begin{bmatrix} +cons \\ -son \\ \boldsymbol{-ant} \\ +cor \\ -cont \\ +voiced \end{bmatrix} \rightarrow \begin{bmatrix} +cons \\ -son \\ \boldsymbol{+ant} \\ +cor \\ -cont \\ +voiced \end{bmatrix} \; /_{\#\_\_\_}$$

The rule above states that consonant sound [ɖ]changes into consonant sound [d] at the initial of a word. It also shows that consonant [ɖ] has features [+cons,-son,-ant, +cor, -cont] while consonants [d] has features [+cons,-son, +ant, +cor, -cont].

3. Sound [ɽ] changes into sound [r]

In loanwords borrowed from Hindi, I foundalveolarization process of consonant sound [ɽ] into consonant sound [r].The datacan be seen as follows:

Hindi		Indonesian	Meaning
[b^{h}ɑ:**ɽ**uɑː]	→	[ba**r**ua]	*pimp*
[b^{h} i**ɽ**i:]	→	[bi**r**i]	*sheep*
[ʧu**ɽ**ɑː]	→	[cu**r**a]	*joke*

[ʧoɽi:]	→	[cu**r**i]	*steal*
[gɑ:ɽi:]	→	[ga**r**i]	*Handcuff (borgol)*

It can be seen on the data that sound [ɽ] changes into sound [r]. The process of sound change can be formulated into phonological rule as follows:

[ɽ] → [r] / $__[v]#

$$\begin{bmatrix} +cons \\ -lat \\ -nas \\ -\boldsymbol{ant} \\ +cor \\ -\boldsymbol{cont} \end{bmatrix} \rightarrow \begin{bmatrix} +cons \\ -lat \\ -nas \\ +\boldsymbol{ant} \\ +cor \\ +\boldsymbol{cont} \end{bmatrix} / \ \$\_\_\begin{bmatrix} +syl \\ -cons \end{bmatrix}\#$$

The rule describes that sound [ɽ] with features [+cons, -lat, -nas, +cor, -ant,-cont] changes into sound [+cons, -lat, -nas, +cor, +ant, +cont] or [r] at the final syllable of a word and followed by vowels. This process occurs when the sound [ɽ] places the position as an onset. Onset is part of syllable that placed before nucleus or vowels.

4. Sound [ʈ] changes into sound [t]

Another Alveolarization process also happens to the sound [ʈ] becomes sound [t]. The data can be seen in the following table.

Hindi		Indonesian	Meaning
[bẽʈɑ:]	→	[be**t**a]	*I*
[bẽʈi:]	→	[be**t**i]	*real evidence of*

			someone fault
[pɛʈi:]	→	[pə**t**i]	*box*
[ro:ʈi:]	→	[ro:**t**i:]	*(bread)*
[si:ʈi:]	→	[si**t**i]	*(whistle)*

The data above shows the sound change of sound [ʈ] into sound [t]. The phonological rule to show the process of sound change can be described as follow:

[ʈ]→ [t] / $__[v]#

$$\begin{bmatrix} +cons \\ -son \\ -\boldsymbol{ant} \\ -cor \\ -cont \\ -voiced \end{bmatrix} \longrightarrow \begin{bmatrix} +cons \\ -son \\ +\boldsymbol{ant} \\ -cor \\ -cont \\ -voiced \end{bmatrix} / \$\_\_\begin{bmatrix} +syl \\ -cons \end{bmatrix}\#$$

The rule above states that consonant sound [ʈ] changes into consonants [t] at the final syllable of a word when sound [ʈ] places the position as an onset. It can be seen from the rule that consonant sound [ʈ] has features [+cons,-son, +ant, -cor, -cont,-voiced] while consonant sound [t] has features [+cons, -son,-ant, -cor, -cont,-voiced]. This process made pus anterior feature from sound [ʈ] changed into minus anterior in sound [t].

4.1.4.3 Consonants deletion process

The deletion processes in Hindi loanwords occur when there are two sequential consonants in a word. The following data show the deletion consonant sound in loanwords borrowed from Hindi.

Hindi		Indonesian	Meaning

[ʧa**pp**al]	→	[ca**p**al]	*Sandals*
[gu:**ss**ɑ:r]	→	[gu**s**ar]	*worry*
[la**dd**ʊ]	→	[la**d**u]	*(dʊmpling)*

The data above show the deletion of sequential consonants which have same features. The process of deletion can be illustrated in the following rule:

$$\begin{bmatrix} -syl \\ +cons \\ \propto son \\ \beta cor \\ \gamma ant \end{bmatrix}\begin{bmatrix} -syl \\ +cons \\ \propto son \\ \beta cor \\ \gamma ant \end{bmatrix} \rightarrow \begin{bmatrix} -syl \\ +cons \\ \propto son \\ \beta cor \\ \gamma ant \end{bmatrix}$$

The rule above explains that two similar consonants in sequence will be eliminated into one consonant. This process occurs because in phonological system of Indonesian Language similar consonants cannot be placed in sequence.

4.1.4.4 Gliding

Gliding process in Hindi loanwords occurs when the approximant sound [ʋ] changes into glide sound [w]. The data can be seen as follows:

Hindi		Indonesian	Meaning
[pahlɑ:**ʋ**ɑ:n]	→	[pahlawan]	*hero*
[ɖe:**ʋ**ɑ:na]	→	[dewana]	*mad*
[ɖe:**ʋ**ɑ:n]	→	[dewan]	*council*

It can be seen from the data above that the sound changesof sound [ʊ] into [w] occurs long vowel [ɑː]. The following rule presents how the process of sound changes of sound [ʊ] into [w].

[ʊ]→[w] / $ ___[ɑː]

$$\begin{bmatrix} -syl \\ -cons \\ +son \\ \boldsymbol{-high} \\ \boldsymbol{-round} \end{bmatrix} \rightarrow \begin{bmatrix} -syl \\ -cons \\ +son \\ \boldsymbol{+high} \\ \boldsymbol{+round} \end{bmatrix} \; / \$ \_\_ \begin{bmatrix} +syl \\ -cons \\ -high \\ +low \\ +long \end{bmatrix}$$

The rule above show that the sound [- round, - high] feature changes to [+ round, + high] before vowel [ɑː] . This process shows there are rounding and highing from sound [ʊ] into [w]. Both of the sounds belong to approximant sounds that are produced from the touch of the lips or labial. The thing that distinguishes the pronunciation of the two sounds is if the sound [ʊ] is produced from the touch of the lower lip with the tip of the upper teeth, while the sound [w] is produced from the touch between the upper lip and lower lip, and between the back of the tongue and soft palate.

4.1.4.5 De-aspiration

In Hindi there are consonants with aspirated feature, the sample of data can be seen below:

Hindi		**Indonesian**	**Meaning**
[**ɖʰ**oːbiː]	→	[dobi]	*laundryman*
[**gʰ**ap]	→	[**g**ap]	*robustious*
[**bʰ**amsɑːl]	→	[**b**aŋsal]	*shed*

[**b**ʰɑ:ɽuɑ:]	→	[**b**arua]	*pimp*
[**ʧ**ʰokrɑ:]	→	[**c**okəra]	*Servant, boy*
[a**c**ʰɑ:r]	→	[a**c**ar]	*pickles*

The data above shows the sound change of aspirated sound into unaspirated sound at all position. Based on the data above, I make phonological rule to show the process of sound change as follows:

$$\begin{bmatrix} -syl \\ +cons \\ +\boldsymbol{asp} \end{bmatrix} \rightarrow \begin{bmatrix} -syl \\ +cons \\ -\boldsymbol{asp} \end{bmatrix}$$

The rule above explains that the aspirated consonant sound in Hindi such as [bʰ], kʰ],[gʰ], [ʧʰ], [cʰ] changed into unaspirated sound. The rule shows that plosive consonant which has [+ asp] feature changedinto [-asp] in the process of borrowing. It can be caused by the distribution of consonants in Indonesian Language which does not have aspirated sounds. Therefore, the entire plosive sounds which has [+asp] features in Hindibecomethe same plosive consonant which without aspirated feature.

4.1.4.6 De-affrication

In borrowing process of loanwords from Hindi into Indonesian Language, I found phonological process namely affrication. This process occurs when affricates sound changed into non affricate sound. The data below present the sound change of sound [ʧ] into sound [c].

Hindi		Indonesian	Meaning
[**ʧ**ɑ:bi:]	→	[**c**abi]	*Linchpin*

[ʧaɳdu:]	→	[**c**andu]	*Prepared opium*
[ʧappal]	→	[**c**apal]	*Sandals*
[ʧarbi:]	→	[**c**arbi]	*Grease*
[ʧɛmki:]	→	[**c**əməki]	*Spangle*
[ʧɛmpɑ:]	→	[**c**əmpa]	*Kind of rice (sejenis padi yang kecil)*
[ʧʰatri:]	→	[**c**atəri]	*Awning (tenda di perahu)*
[ʧʰokrɑ:]	→	[**c**okəra]	*Servant, boy*
[ʧoli:]	→	[**c**oli]	*Bodice, brassiere (pakaian dalam wanita)*
[ʧuɽɑ:]	→	[**c**ura]	*Joke*
[ʧoɽi:]	→	[**c**uri]	*Steal*

The data above shows the sound change of sound [ʧ] into sound [c]. The process of sound change can be illustrated into the following rule:

[ʧ] →[c] / #___

$$\begin{bmatrix} -syl \\ +cons \\ -ant \\ +cor \\ +\boldsymbol{del.rel} \end{bmatrix} \rightarrow \qquad \begin{bmatrix} -syl \\ +cons \\ -ant \\ +cor \\ -\boldsymbol{del.rel} \end{bmatrix} / \#\_\_\_$$

The rule above states that affricate consonant sound [ʧ] will change into consonant sound [c] at the initialposition of a word. It shows that consonants[ʧ] has features [-syl, +cons, -ant, +cor, +del.rel] while consonant sound [c] has features [-syl,+cons, -ant, +cor, -del.rel].

4.1.4.7 Epenthesis

Epenthesis is a process when there is a sound put between two consonants. In this case I found the data from Hindi loanwords related to epenthesis process. The data can be seen as follows:

1. Insertion of vowel [a]

The data below presents the insertion of vowel [a] in a word which I found from Hindi loanwords.

	Hindi		Indonesian	Meaning
a)	[**bh**ɑ:sɑ:]	→	[b**a**hasa]	language
b)	[**bh**ana]	→	[b**a**hana]	noise
c)	[ra**kt**]	→	[rak**a**t]	dance performance

The data above shows that there is an insertion of vowel [a] in a word. This process can be illustrated with the phonological rules below:

1. Ø→ [a] /[b]_[h]

$$Ø \rightarrow \begin{bmatrix} +syl \\ -cons \\ -high \\ +low \\ +front \end{bmatrix} / \begin{bmatrix} +cons \\ -son \\ +ant \\ -cor \\ +voiced \end{bmatrix} \_\_\_\_ \begin{bmatrix} -syl \\ -cons \\ -son \\ +cont \\ -voiced \end{bmatrix}$$

The rule above describes the insertion of vowel [a] which has features [+syl,-cons, -high, +low, +front] between consonant sound [b] and [h]. The insertion of vowel [a] at the first syllable can be influenced by vowel which is following that sound. Then, the insertion of vowel [a] at the second syllable is adjusted to the previous vowel.

2. Ø→ [a] /[k]_[t]

$$Ø \rightarrow \begin{bmatrix} +syl \\ -cons \\ -high \\ +low \\ +front \end{bmatrix} / \begin{bmatrix} -syl \\ +cons \\ +back \\ +high \\ -cor \\ -voiced \end{bmatrix} \_\_\_\_ \begin{bmatrix} -syl \\ +cons \\ -cont \\ +ant \\ +cor \\ -voiced \end{bmatrix}$$

The rule above shows the insertion of sound [a] between two consonant [k] and [t]. This process occurs because there is no consonant cluster of [kt] in Indonesian Language. Therefore, the vowels [a] need be inserted.

3. The insertion of vowel [ə]

The following data presents the insertion of vowel [ə] between two consonants [kɽ], and [gɽ].

	Hindi		**Indonesian**	**Meaning**
a)	[cʰo**kr**ɑː]	→	[cok**ə**ra]	Servant
b)	[pa**gr**i:]	→	[pag**ə**ri]	Head scarf / turban

The list of data above show the insertion of vowel [ə] between consonant [k] __ [r],and [g]__[r]. The phonological rule related to the process can be formulated as follows:

$$\emptyset \rightarrow \begin{bmatrix} +syl \\ -cons \\ -high \\ -low \\ -back \end{bmatrix} / \; \# \begin{bmatrix} -syl \\ +cons \\ -son \\ -cont \\ -strid \end{bmatrix} \_\_\_\_\_ \begin{bmatrix} +cons \\ +son \\ -lat \\ -nas \\ -cont \end{bmatrix}$$

The rule above describes the insertion of vowels [ə] between consonant sound [-syl,+cons,-son,-cont,-strid] and syllabic trill sounds [+ cons, +son, -cont, -lat, -nas]. There are factors that cause the insertion of sound [ə] before sound [ɽ] in Hindi. In Indonesian the sound [ɽ] only has function as a consonant. As we know, that consonant trill sound and consonant lateral sound belong to a liquid sound that resembles a vocal sound, those sounds have a feature [± sil], in certain languages.Because trill sounds in Indonesian always have functions as a consonant [+ cons] thena vowel is needed to keep the word two syllables.

4.2 Discussions

In this section, I explain the factors influencing the phonological processes during the borrowing process from Tamil into Indonesian Language and Hindi into Indonesian Language. Moreover, I also present the table related to the similarities and differences between phonological process of Tamil loanwords and phonological processes in Hindi loanwords.

1. The factors influencing phonological processes

Phonological processes of vowels found in Tamil and Hindi loanwords are vowel shortening, backing process, weakening process, and lowering process, vowel de-nasalization and vowelization. While, phonological processes of consonants consist of velarization, alveolarization, gliding, consonants deletion, consonant strengthening, de-affrication, de-aspiration, trilling and epenthesis.

Vowel shortening process in Tamil and Hindi loanwords are influenced by the differences of vowels distribution between Tamil, Hindi and Indonesian Language. The vowels in Tamil and Hindi consist of long and short vowels whilethe vowels in Indonesian Language only have short vowel. Thus, when the borrowing processes happen, vowels from Hindi and Tamil which have plus long feature will change into minus long feature in Indonesian Language.

Backing process occurs when vowel with plus back changes into minus back vowels. In this case, I found backing process when vowel ʉ changes into vowel [u]. This case happen because Indonesian does not have vowel [ʉ] which

belong to central vowel, so, this sound will be replaced by another vowel which have similar sound.

Vowels lowering process in Tamil loanwords consist of the sound change of vowel [ʌ] into vowel [a]. This process occurs because in Indonesian Language there is no vowel [ʌ]. Thus, vowel [ʌ] from Tamil loanwords will change into vowel [a] during the borrowing process. Vowel [a] is chosen to replace sound [ʌ] because it has similar features, but sound [ʌ] is plus low sound while sound [a] is minus low sound. There also vowels [ɔ] changes into vowel [a] in Hindi loanwords. This sound change occurs because vowel [ɔ] only places in close syllable. In this case, in Hindi loanword this sound could appears in open syllable. So, this sound is replaced by sound [a].

Vowel denasalization, Hindi vowels consists of nasalized vowel but Indonesian Language does not have nasalized sound. When the loanwords taken from Hindi contain nasalized vowel it will change into non nasal vowel in Indonesian Language.

Weakening processes happen when non central vowels change into central vowels. In this case, the central vowel [ə] is belonging to neutral sound. Thus, the sound changes of vowel [I] and [ɛ] becomes vowel [ə] are aimed to simplify the pronunciation. Moreover, the sound [I] and [ɛ] can only appear in close syllable. In this case, when those sounds appear in open syllable, they will be replaced to neutral vowel or another vowel which has similar feature.

Vowelization process occurs in loanwords borrowed from Tamil. This process shows the sound change of diphthong sound [aj] into [e]. Sound [e]

belongs to front mid tense unrounded vowel**.**In Indonesian Language diphthong sound [aj] only occurs at the final position of a word. Because the vowel cluster has contracted with one vowel, the syllable structure is simplified. This sound change also can be influenced by the vowel [o]which appears before the diphthong.Chaer (2009: 104) explained that the sound change of diphthong [aj] into sound [e] is very common because of the result of wanting to facilitate the pronunciation.

Velarization process found in loanwords borrowed from Hindi. Those words are [bɑː**m**siː] which changed into [baŋsi] and [bʰ ə**ms**ɑːl] which changed into [baŋsal]. The sound changes of sound [m] into sound [ŋ] happen because it is followed by alveolar fricative sound [s]. The consonant series of Indonesian Language showed that the sound [m] cannot be followed by fricative sound. Consonants series of Indonesian Language for consonant sound [m] are [mb], [mp], and [mpr]. So if sound [m] is followed by alveolar fricative sound [s], it will change into sound [ŋ]. It is replaced by sound [ŋ] because this sound can follow by consonant [s] and the consonants series of sound [ŋ] consist of [ŋg],[ŋk],[ŋs]and [ŋkr].

Alveolarization processes occur in loanwords borrowed from Tamil and Hindi. The sounds changes are sound [ɖ] into sound [d], sound [ʈ] into sound [t] , sound [ɽ] into sound [r] and sound [t̪] into sound [t]. this process of sounds changes occur because all of the consonant from Hindi and Tamil such as [ɽ], [ʈ], [ɖ], and [t̪] did not exist in distribution of consonants in Indonesian Language. All of those sounds are replaced by the sound which has similar feature with them

in borrowing process. However when /l/ is followed by a consonant or occurs word finally, it is velarised, dark [ɬ]. The process also showed that there are change of phonological rules of Tamil and Hindi during the borrowing process into Indonesian language. For example, in Tamil , consonants /t̪/ → [ʈ] when occurring #_ or _ _/t̪/ → [d̪] when occuring V_V or N_V.There are a few exceptions, however, to this rule. Rarely, [d̪] may occur word initially.Examples:

[d̪u:ram] ‘distance’ #_V

[do:sai] ‘dosa’ #_V.

Moreover, there are also Alveolarization of nasals sound [m], [ɳ], and [ŋ] that changed into nasal sound [n]. First, the sound changes of nasal [m] into [n]. This change happen in word [gɑ:**m**jɑ:], as I explained in the previous section that nasal sound [m] has consonants series such as [mp], [mb] or [mpr]. In this case, loanwords from Hindi as in a word [gɑ:**m**jɑ:] shows that nasal sound [m] is followed by sound [j]. Therefore, this sound changed into nasal sound [n] because this sound has consonant series [nj]. The sound changes of nasal [ɳ] into nasal sound [n] occur because in Indonesian Language there are only four nasals sound like [m], [n], [ŋ] and [ɲ]. Clearly, the sound [ɳ] changed into sound [n] in the borrowing process. Then, the sound changes of nasal [ŋ] into [n] depends on the consonants which are placed after the sound [ŋ]. In this case, the consonant sound [ŋ] in Indonesian Language is rarely followed by consonant [j]. Therefore, the sound [ŋ] will change into sound [n].

Trilling process occurs in Tamil loanwords because there is sound change of tap sound into trill sound. This process happens because Indonesian Language only has one sound [r]. Therefore, other sound outside the phonological systems in Indonesian Language will be replaced with the sounds that have similar features.

Deaspiration process found both in Tamil and Hindi loanwords. This process happens because in phonological system of Indonesian Language there is no aspirated sound. Thus, all of the aspirated sounds from Tamil and Hindi will change into unaspirated sound when the process of borrowing.

Consonants deletion processes in Tamil and Hindi loanwords occur because word structure of Indonesian Language did not used repetition of consonants. Therefore, if there are double consonants such as in a word [çə**mm**ət̪i], one of them will be deleted.

De-affrication process found in loanwords borrowed from Hindi and Tamil. The factor influencing this process is the distribution of consonants in Indonesian Language which do not have affricate sound [ʧ]. Thus, the affricates sound [ʧ] in loanwords borrowed from Hindi and Tamil will change into sound [c]. It is because this sound is almost having similar features to the sound [ʧ]. Both sounds only have difference in delayed released feature.

Epenthesis process found in loanwords borrowed from Hindi. This process occurs because the difference of consonant cluster between Hindi and Indonesian Language. The insertion of vowel [a] between consonant [b] and [h] because Indonesian Language does not have cluster consonant [bh], and [kt].

Therefore, the vowel [a] is inserted. Moreover, there is also an insertion of vowel [ə] in Indonesian Language. The insertion of vowel [ə] between cluster consonants /kr/ and /gr/ is caused by those clusters that are only placed at the initial position. This process is common when it comes to loanword because it is intended to facilitate the pronunciation.

The main factor influencing the phonological process is the differences of phonological system between Tamil, Hindi and Indonesian Language. Then, some processes like Velarization and Alveolarization of nasal sound in Tamil and Hindi loanwords tend to be influenced by the environment where the sounds occur.

2. The differences and similarities of phonological processes between Hindi and Tamil Loanwords in Indonesian Language.

Tamil and Hindi belong to Indian languages, but both of them come from different language family. Hindi belongs to Indo-Aryan language family then Tamil belongs to Dravidian language family. Moreover, Tamil, Hindi and Indonesian Language have their own phonological systems. The difference of phonological system between them does not guarantee that the phonological processes will completely different. In this case, I found similarities and differences of phonological process between Tamil and Hindi Loanwords in Indonesian Language. The explanation related to similarities and differences of phonological process in Tamil and Hindi loanwords can be seen in the following table:

3.1 The Phonological Process in Tamil and Hindi

PHONOLOGICAL PROCESSES	
Tamil	**Hindi**
1. Vowel Shortening	1. Vowel Shortening
2. Weakening Process	2. Weakening Process
3. Lowering Process	3. Lowering Process
4. Velarization	4. Velarization
5. Alveolarization	5. Alveolarization
6. Consonant Deletion	6. Consonant Deletion
7. Gliding	7. Gliding
8. Deaffrication	8. Deaffrication
9. Consonants Strengthening	9. Consonants Strengthening
10. Vowelization	**10. Epenthesis**
11. Backing process	**12. Deaspiration**
	13. De-nasalization Of Vowels

It can be seen from the table above that the phonological processes of Hindi into Indonesian and Tamil into Indonesian have similarities. The similarities can be seen on the factors that influencing the sound change during the borrowing process from Tamil and Hindi into Indonesian Language. For

example, the changing of [+long] vowel, both Tamil and Hindi has vowel with [+long] features then in Indonesian Language there is no vowel with [+long] feature, so when it is borrowed into Indonesian Language both vowel [+long] from Tamil and Hindi change into [-long]. Then, there are also similarities on sound change of liquid sound. In Hindi, there is syllabic trill sound [ɽ] and in Tamil there is tap sound [ɾ]. Both of sound is replaced by trill sound [r] when they are borrowed in Indonesian Language.

Another similarity is the deletion of double consonant from Hindi and Tamil loanwords in Indonesian Language. Indonesian Language did not recognize double consonants. So that, every data which has double consonants will be deleted one of them. There are also similarities of the sound change [ʋ] into sound [w]. Both Tamil and Hindi have semivowel [ʋ] then Indonesian Language did not have sound [ʋ]. In phonological process, semivowel [ʋ] changed into semivowel [w] in Indonesian Language. The sounds changes are also influenced by the different of system phonology, they because the feature unrounded changed into rounded and minus high changed into plus high.

By looking at the results of the study, the similarities of phonological processes can be caused the distribution vowel and consonants of Tamil and Hindi. I mean when there is certain sound in loanwords taken from Hindi or Tamil but it does not have by Indonesian Language Phonological system, it will be changed or replaced into similar sound or it is replaced by sound with have same certain features. For example, /u/ → [ə] when occurring word finally.

Some phonological processes that I found in Tamil and Hindi loanwords also show the differences.The differences of phonological system between Tamil and Hindi Loanwords can be seen on the table above. For example, in the vowelization process, this process only happens to loanwords borrowed from Tamil. This process does not occur in Hindi because diphthong in Hindi have transformed to monophthongs [ɛ:] and [ɔ] and only occur in allophonic variation for example, when the sound is followed by a semivowel. In this case, I did not find the data from Hindi loanwords that contain diphthong sound.

The difference also can be seen in the process of vowel de-nasalization. Hindi has vowels with nasal feature which occur in certain position whereas Tamil does not have vowel with nasal feature. So, the vowel de-nasalization process only occurs in Hindi but not in Tamil.

Then, backing process in Tamil occurs when vowel [ʉ] changes into vowel [u] in Indonesian Language. This difference can happen because Hindi does not have vowel [ʉ] in phonological system.

Another difference process show that in Hindi vowel [ɔ] can occur at the initial and medial position but in Tamil only in final position. The data that I got from Hindi show that vowel sound [ɔ] appears at the medial in open syllable so this sound changes into vowel [a] in Indonesian Language.

Epenthesis process found in loanwords borrowed from Hindi. In this process there is an insertion of vowel [a] between consonant [b] and [h]. This process happen because the different of consonant cluster between Hindi and

Indonesian Language. But, this process does not occur in Tamil loanwords because Tamil does not have cluster consonant [bh].

Based on the explanation above, it can be concluded that the differences and the similarities of phonological process depend on the phonological system of the languages. What I am trying to say is if one language has certain sound but the other does not, it will lead us to the difference process of sound change.

CHAPTER V

CONCLUSION AND SUGGESTION

This chapter consists of conclusion, suggestion and implication of findings

5.1 Conclusion

Based on the results of study, I found some phonological processes from Tamil into Indonesian Language and Hindi into Indonesian Language. The phonological process as cover(1) shortening, (2) weakening, (3) lowering, (5) vowelization, (5) velarization, (6) alveolarization, (7) trilling, (8) gliding, (9) epenthesis, (10) deaspiration, (11) deaffrication, (12) consonant deletion, (13) vowel denasalization, (14) backing process, and (15) consonants strengthening. Some phonological processesfound in Tamil loanwords into Indonesian Language and Hindi into Indonesian Languageis different because they have different phonological system.

The results also prove that the theory of generative phonology is able to explain the process of sounds change that occurs in the process of borrowing from Tamil and Hindi into Indonesian Language. Sound changes that occur can be explained in more detail using distinctive feature theory. Even though those three languages have different complexity and different phonological system, this theory can be used to solve this kind of problem. In addition, the result also reveals that phonological process of loanword between Tamil and Hindi into Indonesian Language can be caused by external and internal factor.

The internal factor is influenced by the difference of phonological system between Tamil, Hindi, and Indonesian Language. The external factor influencing the phonological processes is language contact between Indian and Indonesian people long time ago.

5.2 Suggestion

This research will open up more other studies related to loanwords in Indonesian Language. There are many loanwords in Indonesian Language that have not been studied further yet. In this study, I only examine from the phonological level and it will give opportunities for further researchers who are interested in studying Tamil and Hindi loanwords. This can be an input for further researcher to examine the loanwords from different linguistic models such as, morphology, syntax or semantic.

5.3 Implication of findings

This study reveals that all of languages in the world have their own phonological systems that causethe differences of phonological processes. Although some languages can come from the same language family, it does not guarantee that the languages will have same phonological processes. We need to check the phonological system of them because it leads to the different production of phonological process. Through this study, the reader will know more about loanwords in Indonesian Language especially loan words which borrowed from Indian language like Sanskrit, Tamil and Hindi. The methods, terms and theories in this study also can be used to other research related to phonology in English teaching.

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APPENDICES

Tamil Loanwords in Indonesian Language

Tamil		Indonesian	Meaning
[ɑːʧɑːɾʌm]	→	[acaram]	Wedding ring
[ɑːʧʊ]	→	[acu]	Mould
[aɳɖaj]	→	[andaj]	Possibility
[iːɖɖʌm]	→	[idam]	A pregnant woman craving
[aneːka]	→	[aneka]	Various
[appʌm]	→	[apam]	Kind of rice cake
[vɑːɖaj]	→	[badaj]	Storm
[vɑːlʌm]	→	[balam]	To paddle with short strokes
[vɑːnʧiː]	→	[banci]	Adze
[vaɳi]	→	[bani]	Descendant
[vaʈʈIl]	→	[batIl]	Copper bowl, tray
[vəɖIl]	→	[bədIl]	Gun , rifle
[vənnɑːn]	→	[bənan]	Laundryman
[vajIɾʌm]	→	[bIram]	Red
[çɑːɳaj]	→	[canaj]	Grindstone
[çəmməʈi]	→	[cəməti]	Whip
[çəɾppuː]	→	[cərpu]	Sandals
[çukaj]	→	[cukaj]	Custom duty
[çukkʊ]	→	[cuku]	Dried Gambier root
[çummaː]	→	[cuma]	Only
[goːɳiː]	→	[goni]	A sack
[guɳɖʊ]	→	[gundu]	A marble
[Ilaj]	→	[həlaj]	Sheet
[ɟoːliː]	→	[ɟoli]	Chajr litter , sedan
[kambiː]	→	[kambi]	Rib, paneling
[kaʈəlum]	→	[katəlum]	Bastion
[kappal]	→	[kapal]	Ship
[kɑːɾiː]	→	[kari]	Curry
[kɑːʈʈIl]	→	[katIl]	Bedstead
[kɑːvɑːl]	→	[kawal]	Guard
[kəɖaj]	→	[kədaj]	Small shop
[kəɖʊləj]	→	[kədələj]	Soybean
[kəɻʊɖəj]	→	[kələdəj]	Donkey

[koːɖîː]	→	[kodi]	a quantity of wholesale purchase
[kuɻaj]	→	[kulaj]	Drooping
[kuːɻiː]	→	[kuli]	Pajd labourer
[konɖəj]	→	[konde]	Hajrbun
[onɖəj]	→	[onde]	Kind sweet of meat
[kuɳɖîː]	→	[kundi]	A measure of weight of gold
[lɑːɖʌm]	→	[ladam]	Horse shoes
[ləbbaj]	→	[ləbaj]	Mosque
[mɑːɭɑj]	→	[malaj]	String, garland
[mɑːɭigaj]	→	[maligaj]	Palace
[manɻIk]	→	[manIk]	Beads
[mɑːnIkkʌm]	→	[manIkam]	Gem, jewel
[mɑːɾapuːɭaj]	→	[marapulaj]	Bridegroom
[mɑːjɑː]	→	[maja]	strength
[məɾuŋgaj]	→	[məruŋgaj]	Kind of tree
[meːʈʈaj]	→	[metaj]	Cushion of sitting on
[moɖal]	→	[modal]	Working capital
[miːçaj]	→	[misaj]	Moustache
[muʈʈʉ]	→	[mutu]	Pearl
[nəlajan]	→	[nəlajan]	Fisherman
[niːɭaj]	→	[nilaj]	Value
[niːɭakanɖi]	→	[nilakandi]	Sapphire , azure
[niːɭʌm]	→	[nilam]	Sapphire / blue
[pɑːɳaj]	→	[panaj]	Wooden tray
[pɑːnɖʌm]	→	[pandam]	Resin
[pɑːnɖuː]	→	[pandu]	Guide
[pɑːʈʈIɾʌm]	→	[patIram]	dagger
[pɑːʋaj]	→	[pawaj]	parade
[pəɾiʂaj]	→	[pərisaj]	Shield
[paʈʈam]	→	[patam]	Bridal frontlet
[piːʈʈɑːm]	→	[pitam]	dizziness
[puʈɻʉ]	→	[putu]	Sweet rice cake
[ɾɑːgʌm]	→	[ragam]	Kind, style
[çəɖəliːŋgɑːm]	→	[sədəliŋgʌm]	Red lead

[ɕəɳɑːm]	→	[sənam]	Indigo
[ʈajƐɾ]	→	[taɛr]	Curds
[ʈaɭɑːm]	→	[talam]	Plate, tray
[ʈanɖlḷ]	→	[tandIl]	Overseer, foreman
[ʈɑːnɖuː]	→	[tandu]	Litter, sedan chajr
[ʈiːɾaj]	→	[tiraj]	Curtain
[ʈoːɭan]	→	[tolan]	Friend
[uppʌm]	→	[upam]	Polishing
[ʋeːɖɑː]	→	[weda]	The Vedic book
[ʋɑːɟiː]	→	[baɟi]	Wedge
[ʋiːʧʉ]	→	[bicu]	Jack for rajsing weight
[ʋəɾɑːmmɑːɳi]	→	[bəramani]	Coral beads
[aɳɖʌm]	→	[andam]	Trim one's hajr neatly
[aʧɑːɾɑː]	→	[acara]	Program / agenda
[ʋIɭəŋgʉ]	→	[bələŋgu]	Obstacle
[guːɾInɖʌm]	→	[gurIndam]	Aphorism in two lines

Hindi Loanwords in Indonesian Language

Hindi		**Indonesian**	**Meaning**
[ɑːjɑːh]	→	[ajah]	father
[ɦaɽgariː]	→	[argari]	handcuffs
[bhana]	→	[bahana]	noise
[bɑːgɖu]	→	[baʔdu]	after
[bɑːɳɖoː]	→	[bando]	Kerchief/bandana
[bhɑːsɑː]	→	[bahasa]	language
[bʰ amsɑːl]	→	[baŋsal]	shed
[bɑːmsiː]	→	[baŋsi]	flute
[bʰɑːɽuɑː]	→	[barua]	pimp
[bɑːsiː]	→	[basi]	Stale
[bakʰijɑː]	→	[bakia]	Back-stich
[ʋɛlɑjtiː]	→	[bəlati]	dagger
[bʰ ɛndɑːɽiː]	→	[bəndari]	treasurer
[bʰendiː]	→	[bendi]	Okra, chariot
[bẽʈɑː]	→	[beta]	I
[bẽʈiː]	→	[beti]	real eʋidence of someone fəlt
[bʰ iɽiː]	→	[biri]	sheep
[ʧɑːbiː]	→	[cabi]	linchpin
[ʧaɳduː]	→	[candu]	Prepared opium
[ʧappal]	→	[capal]	Sandals
[ʧarbiː]	→	[carbi]	grease
[ʧɛmkiː]	→	[cəməki]	spangle
[ʧɛmpɑː]	→	[cəmpa]	Kind of rice (sejenis padi yang kecil)
[ʧʰatriː]	→	[catəri]	Awning (tenda di perahu)
[ʧʰokrɑː]	→	[cokəra]	Serʋant, boy
[ʧoliː]	→	[coli]	Bodice, brassiere (pakaian dalam wanita)
[ʧuɽɑː]	→	[cura]	joke
[ʧoɽiː]	→	[curi]	steal
[dɑːl]	→	[dal]	Split peas
[dɑːm]	→	[dam]	Dam
[ɖaɳɖiː]	→	[dandi]	kettledrum
[ɖɑːrciːniː]	→	[darcini]	cinnamon
[ɖeːʋɑːna]	→	[dewana]	mad
[ɖɛrita]	→	[dərita]	suffer
[ɖʰoːbiː]	→	[dobi]	laundryman
[ɖiːjɑː]	→	[dian]	Candle
[ɖeːʋɑːn]	→	[dewan]	council
[ɣɑːʤuːs]	→	[gaɬus]	Cashew nut

[gʱap]	→	[gap]	Tittle-tattle
[gʰɑ:t]	→	[gat]	Public laundry
[gɑ:ɽi:]	→	[gari]	Handcuff (borgol)
[kaɽi:]	→	[kari]	curry
[gʱauɽi:]	→	[gauri]	Cowrie-shell
[gɔpuɽa]	→	[gapura]	gate
[gelecɑ:]	→	[geleca]	Light mattress
[gɑ:mjɑ:]	→	[ganja]	Indian himp
[gʊli:]	→	[guli]	A marble
[gu:ssɑ:r]	→	[gusar]	worry
[holi:]	→	[holi]	Festiʋal of krishna
[ʤɑ:gat]	→	[jagat]	world
[ʤʰampɑ:n]	→	[jampan]	Palanquin
[ɟi:n]	→	[ɟin]	(saddle)
[kale:]	→	[kale]	Scrape clean
[kɑ:ŋʤ**ʊs**]	→	[kanjʊs]	Cell, lock up
[kɛɽɑ:ni:]	→	[kərani]	Clerk
[laddʊ]	→	[ladu]	(dʊmpling)
[laskaɽ]	→	[laskar]	Army, soldier
[moɽɑ:]	→	[mota]	(coarse cloth)
[pɑ:di:]	→	[padi]	Rice in the husk
[pagɽi:]	→	[pagəri]	Turban, head scraf
[pʱaɽɑ:]	→	[para]	(sentry dʊty)
[parɑ:ʈʰɑ:]	→	[parata]	(kind of bread)
[pɛʈi:]	→	[pəti]	box
[rakt]	→	[rakat]	(scarlet berry)
[ro:ʈi:]	→	[ro:ti:]	(bread)
[stʰɑ:n]	→	[setan]	(reserʋe dʊty)
[si:ʈi:]	→	[siti]	(whistle)
[su:ji:]	→	[suji]	(coarse wheat meal)
[sutli:]	→	[sutəli]	(coarse thread)
[tɑ:l]	→	[tal]	(talipot palm, lontar)
[tɑ:lɑ:]	→	[tala]	(padlock)
[ʈo:pi:]	→	[topi]	(hat)
[uʤɑ:r]	→	[ujar]	utterance
[beʈi]	→	[beti]	(woman of the coʊrt)
[ɑ:bemɑ:ɳɑ:]	→	[abemana]	(anal or urethral orifices)
[bi:]	→	[bi]	aunt [short of bibi]
[dʊrijɑ:]	→	[durija]	Muslim fabric
[hi:ɳɑ:]	→	[hina]	Low, despicable
[pahlɑ:ʋɑ:n]	→	[pahlawan]	hero
[acʰɑ:r]	→	[acar]	pickles
[kacɑ:]	→	[kaca]	glass

Sound Change in Tamil Loanwords IntoIndonesian Language

Sound Change	Tamil		Indonesian	Meaning
Long → short	[**ɑ:**ʧ**ɑ**ːɾʌm]	→	[**a**c**a**ram]	Wedding ring
	[**i:**ɖɖʌm]	→	[**i**dam]	A pregnant woman craving
	[an**e:**ka]	→	[an**e**ka]	Various
	[çəɾpp**u:**]	→	[cərp**u**]	Sandals
	[g**o:**ŋ**i:**]	→	[g**o**n**i**]	A sack

Sound Change	Tamil		Indonesian	Meaning
ʉ→u	[guɳɖ**ʉ**]	→	[gund**u**]	A marble
	[ɑːʧ**u**]	→	[ac**u**]	Mould
	[çukk**ʉ**]	→	[cuk**u**]	Dried Gambier root
	[mut̪t̪**u**]	→	[mut**u**]	Pearl
	[puʈʈ**u**]	→	[put**u**]	Sweet rice cake
	[ʊiːʧ**u**]	→	[bic**u**]	Jack for rajsing weight
	[ʊIl̪əŋg**u**]	→	[bələŋg**u**]	Obstacle

Sound Change	Tamil		Indonesian	Meaning
ʌ→a	[app**ʌ**m]	→	[ap**a**m]	Kind of rice cake
	[ʊɑːl̪**ʌ**m]	→	[bal**a**m]	To paddle with short strokes
	[ʊajIɾ**ʌ**m]	→	[bIr**a**m]	Red
	[lɑːɖ**ʌ**m]	→	[lad**a**m]	Horse shoes
	[mɑːnIkk**ʌ**m]	→	[manIk**a**m]	Gem, jewel
	[pɑːt̪t̪Iɾ**ʌ**m]	→	[patIr**a**m]	dagger

Sound Change	Tamil		Indonesian	Meaning
I→ə	[ʊ**I**[əŋgʉ]	→	[bələŋgu]	Obstacle
	[**I**[aj]	→	[hələj]	Sheet

Sound Change	Tamil		Indonesian	Meaning
ʉ→ə	[kəɖ**ʉ**ləj]	→	[kədələj]	Soybean
	[kəɻ**ʉ**ɖəj]	→	[kələdəj]	Donkey

Sound Change	Tamil		Indonesian	Meaning
əj → e	[konɖ**əj**]	→	[konde]	Hairbun
	[onɖ**əj**]	→	[onde]	Kind sweet of meat

Sound Change	Tamil		Indonesian	Meaning
ɾ→ r	[ʈi:**ɾ**aj]	→	[ti**r**aj]	Curtajn
	[ʋajI**ɾ**ʌm]	→	[bI**r**am]	Red
	[ʋə**ɾ**ɑ:mmɑ:ɳi]	→	[bə**r**amani]	Coral beads
	[aʧɑ:**ɾ**ɑ:]	→	[aca**r**a]	Program / agenda
	[gu**ɾ**InɖʌM]	→	[gu**r**Indam]	Aphorism in two lines

Sound Change	Tamil		Indonesian	Meaning
ʋ→b	[**ʋ**ɑ:[ʌm]	→	[**b**alam]	To paddle with short strokes
	[**ʋ**ɑ:nʧi:]	→	[**b**anci]	Adze
	[**ʋ**aɳi]	→	[**b**ani]	Descendant
	[**ʋ**aʈʈI[]	→	[**b**atIl]	Copper bowl, tray
	[**ʋ**əɖI[]	→	[**b**ədIl]	Gun , rifle
	[**ʋ**ənnɑ:n]	→	[**b**ənan]	Laundryman
	[**ʋ**ajIɾʌm]	→	[**b**Iram]	Red

Sound Change	Tamil		Indonesian	Meaning
ʋ→w	[kɑːʋɑːl]	→	[ka**w**al]	Guard
	[pɑːʋaj]	→	[pa**w**aj]	parade
	[**ʋ**eːɖɑː]	→	[**w**eda]	The Vedic book

Sound Change	Tamil		Indonesian	Meaning
ɭ→ l	[ɟoː**ɭ**iː]	→	[ɟo**l**i]	Chajr litter , sedan
	[kaʈə**ɭ**um]	→	[katə**l**um]	Bastion
	[ku**ɭ**aj]	→	[ku**l**aj]	Drooping
	[kuː**ɭ**iː]	→	[ku**l**i]	Pajd labourer
	[mɑː**ɭ**ɑj]	→	[ma**l**aj]	String, garland
	[mɑːɾapuː**ɭ**aj]	→	[marapu**l**aj]	Bridegroom

Sound Change	Tamil		Indonesian	Meaning
ɳ→ n	[ma**ɳ**Ik]	→	[ma**n**Ik]	Beads
	[goː**ɳ**iː]	→	[go**n**i]	A sack
	[çɑː**ɳ**aj]	→	[ca**n**aj]	Grindstone
	[ʋa**ɳ**i]	→	[ba**n**i]	Descendant

Sound Change	Tamil		Indonesian	Meaning
ɻ→ l	[kəɻ**ɻ**ɯɖəj]	→	[kə**l**ədəj]	Donkey

Sound Change	Tamil		Indonesian	Meaning
ɖ→ d	[moɖ**ɖ**al]	→	[mo**d**al]	Working capital
	[pɑːnɖ**ɖ**uː]	→	[pan**d**u]	Guide
	[ʈɑːnɖ**ɖ**uː]	→	[tan**d**u]	Litter, sedan chajr
	[guːɾInɖ**ɖ**ʌm]	→	[gurIn**d**am]	Aphorism in two lines

Sound Change	Tamil		Indonesian	Meaning
ʈ→ t	[ʈaɭɑ:m]	→	[talam]	Plate, tray
	[ʈanɖlɭ]	→	[tandIl]	Overseer, foreman
	[ʈo:ɭan]	→	[tolan]	Friend
	[pi:ʈʈɑ:m]	→	[pitam]	dizziness

Sound Change	Tamil		Indonesian	Meaning
ʧ→ c	[a**ʧɑ:rɑ:**]	→	[a**c**aram]	Wedding ring
	[ɑ:**ʧ**ʉ]	→	[a**c**u]	Mould
	[ʋɑ:n**ʧ**i:]	→	[ban**c**i]	Adze

Sound Change	Tamil		Indonesian	Meaning
ɖ→ d	[ʋe:**ɖ**ɑ:]	→	[we**d**a]	The Vedic book
	[aɳ**ɖ**ʌm]	→	[an**d**am]	Trim one's hajr neatly
	[çə**ɖ**əɭi:ŋgɑ:m]	→	[sə**d**əliŋgʌm]	Red lead
	[pɑ:n**ɖ**ʌm]	→	[pan**d**am]	Resin

Sound Change	Tamil		Indonesian	Meaning
ʈ→ t	[pa**ʈʈ**am]	→	[pa**t**am]	Bridal frontlet
	[pu**ʈʈ**ʉ]	→	[pu**t**u]	Sweet rice cake
	[çəmməʈi]	→	[cəmə**t**i]	Whip
	[ʋa**ʈʈ**Iɭ]	→	[ba**t**Il]	Copper bowl, tray

Sound Change	Tamil		Indonesian	Meaning
Ç → c	[**ç**ɑ:ɳaj]	→	[**c**anaj]	Grindstone
	[**ç**əmməʈi]	→	[**c**əməti]	Whip
	[**ç**ərppu:]	→	[**c**ərpu]	Sandals
	[**ç**ukaj]	→	[**c**ukaj]	Custom duty
	[**ç**ukkʉ]	→	[**c**uku]	Dried Gambier root

Sound	Tamil		Indonesian	Meaning

Change				
Deletion	[kappal]	→	[kapal]	Ship
	[ləbbaj]	→	[ləbaj]	Mosque
	[çumma:]	→	[cuma]	Only
	[mɑ:nIkkʌm]	→	[manIkam]	Gem, jewel

Sound Change in Hindi Loanwords IntoIndonesian Language

Sound Change	Hindi		Indonesian	Meaning
Long → short	[**ɑ:**jɑ**:**h]	→	[**a**j**a**h]	father
	[bɑ:ɳɖ**o:**]	→	[b**a**nd**o**]	Kerchief/bandana
	[bɑ:s**i:**]	→	[b**a**s**i**]	Stale
	[ʧaɳd**u:**]	→	[cand**u**]	Prepared opium
	[ɖʰ**o:**b**i:**]	→	[d**o**b**i**]	laundryman

Sound Change	Hindi		Indonesian	Meaning
ɛ →ə	[ʧ**ɛ**mki:]	→	[cəməki]	spangle
	[ʧ**ɛ**mpɑ:]	→	[cəmpa]	Kind of rice (sejenis padi yang kecil)
	[ʋ**ɛ**lɑjti:]	→	[bəlati]	dagger
	[bʰ **ɛ**ndɑ:ɽi:]	→	[bəndari]	treasurer

Sound Change	Hindi		Indonesian	Meaning
ɔ→ a	[g**ɔ**puɽa]	→	[g**a**pura]	gate

Sound Change	Hindi		Indonesian	Meaning
ẽ →e	[b**ẽ**ʈɑ:]	→	[b**e**ta]	I
	[b**ẽ**ʈi:]	→	[b**e**ti]	real eʋidence of someone fəlt

Sound Change	Hindi		Indonesian	Meaning
ʊ→ u	[laddʊ]	→	[lad**u**]	(dʊmpling)

Sound Change	Hindi		Indonesian	Meaning
m →ŋ	[bʰ a**m**sɑ:l]	→	[ba**ŋ**sal]	shed
	[bɑ:**m**si:]	→	[ba**ŋ**si]	flute

Sound Change	Hindi		Indonesian	Meaning
m→n	[gɑː**m**jɑː]	→	[ga**n**ja]	Indian himp

Sound Change	Hindi		Indonesian	Meaning
ɳ→ n	[hiː**ɳ**ɑː]	→	[hi**n**a]	Low, despicable
	[ʧa**ɳ**duː]	→	[ca**n**du]	Prepared opium
	[bɑː**ɳ**ɖoː]	→	[ba**n**do]	Kerchief/bandana
	[ɑːbemɑː**ɳ**ɑː]	→	[abema**n**a]	Anal or urethral orifices

Sound Change	Hindi		Indonesian	Meaning
ɖ→d	[**ɖ**aɲ̟**ɖ**iː]	→	[**d**andi]	kettledrum
	[**ɖ**ɑːrciːniː]	→	[**d**arcini]	cinnamon
	[**ɖ**eːʊɑːna]	→	[**d**ewana]	mad
	[**ɖ**iːjɑː]	→	[**d**ian]	Candle
	[**ɖ**eːʊɑːn]	→	[**d**ewan]	council

Sound Change	Hindi		Indonesian	Meaning
ʈ→t	[pɛ**ʈ**iː]	→	[pəti]	box
	[roː**ʈ**iː]	→	[roːtiː]	(bread)
	[siː**ʈ**iː]	→	[siti]	(whistle)
	[be**ʈ**i]	→	[beti]	(woman of the coʊrt)

Sound Change	Hindi		Indonesian	Meaning
ɽ→ r	[pag**ɽ**iː]	→	[pagə**r**i]	Turban, head scraf
	[pʰa**ɽ**ɑː]	→	[pa**r**a]	(sentry dʊty)
	[kɛ**ɽ**ɑːniː]	→	[kə**r**ani]	Clerk
	[laska**ɽ**]	→	[laska**r**]	Army, soldier
	[gɑː**ɽ**iː]	→	[ga**r**i]	Handcuff (borgol)
	[ka**ɽ**iː]	→	[ka**r**i]	curry

Sound Change	Hindi		Indonesian	Meaning

ʋ→w	[ɖe:**ʋ**ɑːna]	→	[de**w**ana]	mad
	[ɖe:**ʋ**ɑːn]	→	[de**w**an]	council
	[pahlɑː**ʋ**ɑːn]	→	[pahla**w**an]	hero

Sound Change	**Hindi**		**Indonesian**	**Meaning**
ʧ→c	[**ʧ**ɑːbiː]	→	[**c**abi]	linchpin
	[**ʧ**aɳduː]	→	[**c**andu]	Prepared opium
	[**ʧ**appal]	→	[**c**apal]	Sandals
	[**ʧ**arbiː]	→	[**c**arbi]	grease
	[**ʧ**ɛmkiː]	→	[**c**əməki]	spangle
	[**ʧ**ɛmpɑː]	→	[**c**əmpa]	Kind of rice (sejenis padi yang kecil)
	[**ʧ**ʰatriː]	→	[**c**atəri]	Awning (tenda di perahu)

Sound Change	**Hindi**		**Indonesian**	**Meaning**
ʤ→ j	[ɣɑːʤuːs]	→	[gaɬus]	Cashew nut
	[kɑːŋʤ**ʊs**]	→	[kanjʊs]	Cell, lock up

Sound Change	**Hindi**		**Indonesian**	**Meaning**
Aspirated	[**pʱ**aɽɑː]	→	[**p**ara]	(sentry dʊty)
	[parɑː**ʈʰ**ɑː]	→	[para**t**a]	(kind of bread)
	[a**cʰ**ɑːr]	→	[a**c**ar]	pickles
	[**gʰ**ɑːt]	→	[**g**at]	Public laundry
	[**bʰ**ɑːɽuɑː]	→	[**b**arua]	pimp

Sound Change	**Hindi**		**Indonesian**	**Meaning**
Deletion	[gu:**ss**ɑːr]	→	[gu**s**ar]	worry
	[la**dd**ʊ]	→	[la**d**u]	(dʊmpling)
	[ʧa**pp**al]	→	[ca**p**al]	Sandals

Sound Change	**Hindi**		**Indonesian**	**Meaning**
ʊ→ ɓ	[**ʋ**ɛlɑjtiː]	→	[**b**ələti]	dagger

Sound Change	Hindi		Indonesian	Meaning
Insertion	[**bh**ana]	→	[b**a**hana]	noise
	[**bh**ɑ:sɑ:]	→	[b**a**hasa]	language
	[ʧɛ**mk**i:]	→	[cə**m**ə**k**i]	spangle
	[ʧʰo**kr**ɑ:]	→	[cok**ə**ra]	Serνant, boy
	[pa**gɽ**i:]	→	[pag**ə**ri]	Turban, head scraf

Sound Change	Hindi		Indonesian	Meaning
ɦ →ɐ	[**ɦ**aɽgari:]	→	[argari]	handcuffs

Sound Change	Hindi		Indonesian	Meaning
g→ʔ	[bɑ:**g**ɖu]	→	[ba**ʔ**du]	after